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Illinois Medical Journal

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Office of Publication 715 Lake Street, Oak Park, Illinois; Editorial and Executive Office 6221 Kenmore Ave., Chicago

Vol. 79, No. 3 MARCH, 1941 $3.00 a Year

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Entered as Second-class Matter July 21, 1919, at the Post Office, Oak Park, Illinois, under the Act of March 8, 1879. Acceptance for mailing at special rate of postage provided for in Section 1102, Act of October 8, 1917, authorized July 15, 1918.

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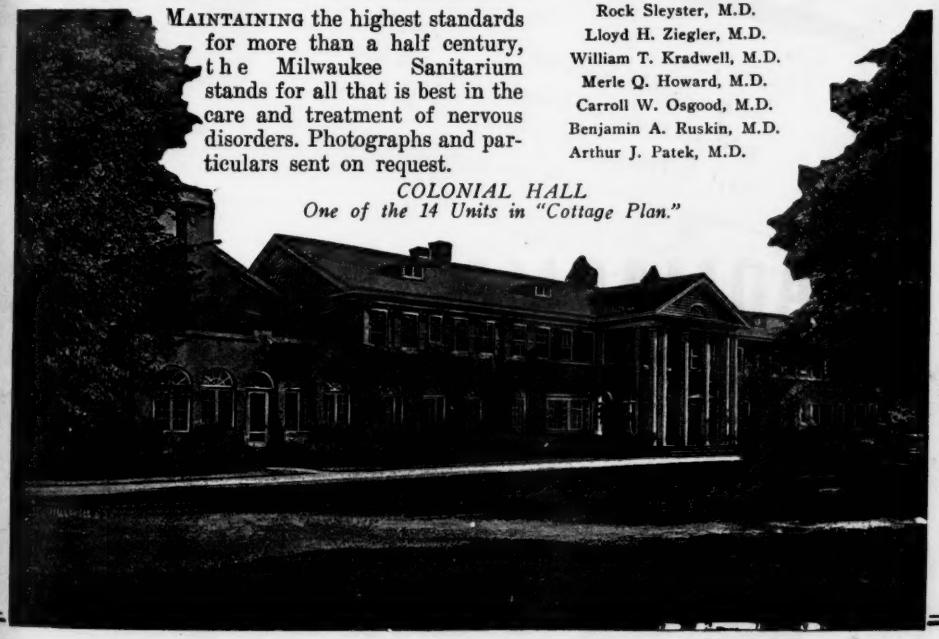

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ILLINOIS MEDICAL JOURNAL

THE OFFICIAL ORGAN OF
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VOL. 79 OAK PARK, ILL., MARCH, 1941 NO. 3

Published monthly by the Illinois State Medical Society under the direction of the Publication Committee of the Council.

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Membership correspondence to Dr. Harold M. Camp, Monmouth, Ill.

Society proceedings and news items and changes in the mailing list to Dr. Henry G. Ohls, Managing Editor, 1618 Juneway Terrace, Chicago.

Subscription price of this JOURNAL to persons not members of the Illinois State Medical Society is $3.00 per year, in advance, postage prepaid, for the United States, Cuba, Porto Rico, Philippine Islands, Hawaiian Islands and Mexico. $4.00 per year for all foreign countries included in the postal union. Canada, $3.50. Single current copies, 50 cents.

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Editorials

IT CAN BE DONE BY ORGANIZATION

Only by organization that will make itself felt at the polls, only by the strength of the ballot sagely and emphatically applied, can medicine hope to save itself and humanity.

History has a habit of repeating itself. It is of record that never during any calamity, no matter how catastrophic, have the disciples of Aesculapius ever abandoned humanity, though it would seem that humanity has now deserted medicine and ethical ideals.

And so now, as never before, it is necessary for closely organized groups of medical men to fight with unprecendented vigor for their rights and principles. Much has been done in the past few years towards educating the general public in the ways and ideals of ethical medicine, if not as to its prerogatives. Unfortunately the profession itself needs this instruction in the ways and the intrusions of the general public — especially the methods of the lawmakers, the medico-politicos, the socialistic agitators and the scheming bureaucrats who have taxed us all so heavily.

IS SMOKING A HEALTH HAZARD?

Recent increase in the consumption of cigarettes in the United States by both sexes, but particularly by women, has renewed interest in the effects of smoking upon the human body, and a sincere effort on the part of medical science is being made to determine whether current criticism, gained chiefly at the expense of the cigarette — and by the same token of the woman smoker — is valid.

Late figures show that for the fiscal year ending June 30, 1940, tobacco consumption was as follows: 5½ billion cigars, 178 billion cigarettes, 130 million little cigars, 2½ million large cigarettes, besides 302 million pounds of chewing and smoking tobacco. Only regular size cigars and cigarrettes showed an increase over the preceding year; all other types showed a decrease in consumption. In the cigarette field the gain

was 5.75 per cent. showing that apparently the woman smoker is having her day.

Girls' schools that even a decade ago showed a cold shoulder to the student who felt that smoking was essential to her happiness now make haste to woo her with an attractive smoking room. The reason is simple. Principles, presidents and headmistresses discovered that girls *would* smoke on the sly; so they decided that executive sanction might rob the action of the thrill of enjoying forbidden sweets.

Removal of the taboo has brought to light some facts concerning smoking in our leading women's colleges. Questionnaires answered by Wellesley students showed that by 1937 smoking had increased from 53 to 70 per cent. over 1930; while at Bryn Mawr more than half of the student body smokes. Over 82 per cent. of the young women at Wellesley inhaled. Reasons for smoking included: pleasure, curiosity, friends did and social considerations.

We may truthfully say that the lid is off and advertising, insidious and effective is having its day. Occasionally one finds a lone voice crying in the wilderness like Professor X — of a well-known Chicago institution of learning, who, single-handed, has made a number of firms back down on advertising statements by sheer presentation of scientific fact.

Smoking as a moral issue is long passé, and today social agencies do not recognize the problem as such. People simply will not cut down on smoking unless it can be proved to be injurious to the health — and frequently not even then. Here is where it is up to the medical profession to assume responsibility.

Current periodical literature during the past year and a half alone would reveal nearly one hundred fifty articles on smoking, about one-third of them appearing in strictly medical publications. This would indicate that a sincere effort is being made to determine whether cigarette advertisers shall have the last word. A wide variety of medical opinion is expresseed as to the harm inflicted by cigarette smoke.

Medical research in its published results has in general made no distinction between men and women patients. Therefore we may apply findings equally to both.

An interesting fact was brought out at Washington University, where an elaborate machine for measuring the volume of smoke of the average puff on a cigarette was invented. The total volume of respiration was determined to be 500cc, while the volume per puff ranged between 25cc and 40cc. Some of the higher volumes were recorded among the women. Because of various smoking habits it has been pointed out that the nicotine content in tobacco has no strict relation to the amount appearing in the smoke. Therefore the interest in the amount of smoke inhaled.

One differentiation between men and women smokers recorded in recent medical literature occurred in the matter of taste preference. Donald A. Laird[1] tested 150 subjects for reactions to tartness of fruit juice. Smoking made no difference in the preference curves for men in either age group or for women in the 20 to 40 age group. Older women who smoked showed a predilection for tartness, from which Laird facetiously concluded that the proper gift for a smoking grandmother was not a box of candy but a jar of pickles.

While it is well known that cancer of the mouth, lips, tongue, larnyx, pharynx, etc. is more prevalent in smokers than nonsmokers, strangely enough the increase in the number of women smokers has not been paralleled by a corresponding increase in the incidence of cancer of the mouth and adjacent regions in women.

The effects of smoking upon pregnant women are still being debated. The truth probably lies midway between affirmations that it is disastrous and the statement that melancholy tales about extreme ill effects of smoking upon women and their babes are largely mythical. The obstetrician who remarked that he dreaded handling the case of a society woman who smoked to excess doubtless reflected the sentiment of many of his colleagues.

A reexamination of the effects of cigarette smoking upon the human body, as seen by the medical profession today, may prove worthwhile in view of the increased consumption. What are the charges laid at the door of the cigarette, and just how seriously should we take them?

Local Irritation — Causative Elements: Local irritation has been ascribed to various elements in the cigarette. Just what are these elements and how large a part do they play?

Irritation has been attributed to heat burning the lips and mucous membranes. This factor

1. Laird, Donald A.: The Effect of Smoking on Taste Preferences, M. Rec. 149: 404, 1939.

may be important in connection with cancer of the lower lip noted in devotees of short-stemmed clay pipes. Some ads would lead us to believe that it is also true of cigarette smoke.

Accurate measurements show that the temperature of the smoke inhaled changes little from that of the room air during the burning of the first quarter of the cigarette. With successive puffs there is a gradual rise until about one-half of the cigarette has been consumed, when the temperature usually reaches approximately that of the body. As the stump is burned, the temperature continues to rise, and painfully hot smoke may be obtained. Accordingly, a cigarette holder may lead to actual burns from hot smoke. Temperature range does not vary with the different brands. Mentholated cigarettes give the effect of coolness, but under unsafe and undesirable conditions.

Emil Bogen[2] states that the irritating properties of tobacco are independent of the nicotine content. To prove this, he cites the fact that Porto Rican cigarettes, with a low nicotine content, are frequently regarded as the most irritating. It has been suggested, he says, that irritation might be related to the "free nicotine" in cigarettes. Studies show that "free nicotine" is inversely proportional to hydrogen concentration of tobacco, and that actually it is greater in the Porto Rican brands, for which most irritation is claimed. Bogen asserts that there is no confirmation for the claim that nicotine is converted into pyridine during the smoking process.

While it is chemically possible to extract nearly all nicotine from cigarettes, no commercial product does this, despite advertising claims. The nicotine content of one cigarette may run as high as 3.3 mgs.; even if 70 per cent, is removed, 1 mg. is retained. The average content is 2.52 mgs., of which 2.0 mgs. is absorbed by the system when about two-thirds of a cigarette is smoked and inhaled in a period of 5 minutes.

The irritation to the eyes of the bystander so noticeable in a closed room in which smoking is done probably is accounted for by the ammonia content, the smoker himself absorbing very little of the ammonia through his mouth.

Traces of hydrogen sulphide, menthyl alcohol and cyanide are negligible factors in irritation, although tarry substances may be of importance.

The reputed antiseptic properties of smoke have been ascribed with conflicting results to the formaldehyde content of the smoke, which is present in greater concentration in American tobaccos. The presence of furfural and formic acid adds to irritation. In cigarettes treated with hygroscopic agents, acrolein may actually be an irritant. Acrolein is present in the native fats of tobacco, but more comes from the 2 or 3 per cent. of glycerin added to hygroscopic agents.

The belief that combustion of cigarette paper contributes to irritation has led to repeated attempts to eliminate it. Actually the amount of smoke from the paper is too low to be of consequence, and most papers have been proved free from irritating nitrates.

The arsenic originating in insecticides used on the plant may be concerned in chronic skin lesions, but smoke contains too low a concentration to cause local irritation or acute arsenical poisoning.

In summarizing, we may say that irritation to the eyes of the bystander is due to ammonia and the alkaline content of smoke from the burning end of the cigarette. Irritation of the mucous membrane may result from heat, "free nicotine," pyridine, and other nitrogenous bases, volatile acids, tarry and phenolic substances, and particularly the aldehydes liberated in the smoke.

Bodily Reactions to Cigarette Smoke: Minor symptoms reported by habitual smokers in a recent experiment include a dry or irritated throat, husky or hoarse voice, excess secretion, mucus, stuffiness and dryness of the nose, sneezing, coughing, tickling of the throat, burning of the tongue, "dopey" feeling, burning and fatigue of the eyes, bad taste, nervousness and loss of appetite. The total number of symptoms was higher for a heavy smoker as we might expect.

Among the effects of tobacco poisoning are: amblyopia, tinnitus aurium, nerve type deafness, tendency to heartburn, symptoms simulating duodenal ulcer, contact ulcers, vasospasm and cardiac irregularity. In the gastric function it causes a rise in secretion and inhibits hunger. On the intestines, x-ray studies have shown colonic hyperirritability which produces either diarrhea or spastic constipation. Many tobacco buyers and workers are known to be subject to eczemia and other erythematous or maculopapulary rashes when handling certain tobaccos.

Charles B. Hollis[3] truly points out that smok-

2. Bogen, Emil: **Irritant Factors in Tobacco Smoke,** Calif. and Western Med. **45:** 342-346, 1936.

ing has become so universal and the so-called tobacco cough so common that physicians have never generally accepted it as a pathologic entity. "I wonder," Hollis says, "how many millions of cases of permanent physical or mental change could be tabulated, if we were all tobacco conscious to the degree of recognition of this situation when we see it."

The main reasons for the infrequency of serious poisoning are that the percentage of nicotine in tobacco is too small to make it easy to get a fatal dose from the ingestion or the inhalation of its smoke, and that nausea and vomiting are early symptoms which ordinarily prevent further absorption of the drug.

Longevity: The effects of nicotine upon longevity are fairly generally accepted. Raymond Pearl's studies indicated that even moderate smoking decreased the life span, while heavy smokers have a much poorer life expectancy than heavy drinkers. The findings of James J. Short, Harry J. Johnson and Harold A. Ley[4], based on questionnaires to an unselected group of 2031 insurance policy holders, which were obtained independently of physical examinations, indicate a trend in accordance with Pearl's report, which showed increased mortality among heavy smokers.

Cigarette Smoke in Throat and Lungs: What does recent medical research reveal concerning the reaction of the throat and lungs to cigarette smoke? Ballenger[5] insists that he is unable to pick out a "smoker's throat." He concludes that no definite relationship exists between the enlargement of the lymphatic tissue of the pharynx and the number of cigarettes smoked per day and maintains that local effects of cigarette smoke on mouth, throat and nose are debatable. On the other hand he disputes the claim that any certain hygroscopic agent is less irritating than another. He found no significant difference in irritation between cigarettes treated with diethylene glycol, those moistened with glycerin and cigarettes containing no hygroscopic agent. When he found irritation present, it was not sufficiently marked to justify definite conclusions. To eliminate possibilities of error, he used three lots of cigarettes made by one manufacturer of the same batch of tobacco.

A prominent roentgenologist to whom Charles Hollis had sent a patient remarked that although one does not see the phrase in textbooks, he has learned to appreciate an appearance of chest x-rays to which he refers as "tobacco lungs." Such testimony would indicate that tobacco damage to the lower respiratory tract can be demonstrated upon x-ray plates.

Hollis continues, "I maintain that there is much evidence to support an opinion that the mucous membrane effects are probably secondary to the many and often repeated shocks resulting from either atopic or acquired sensitivity to the combustion products of tobacco smoking, or to direct drug action, which lead to varying degrees of tissue changes. I have been unable to find any literature bearing upon favorable results with the use of prepared tobacco antigens for respiratory tract manifestations, although they are used with great satisfaction in the eczemas seen in tobacco handlers."[6]

Smoking and Coronary Disease: In certain individuals with coronary disease the use of tobacco has been known to precipitate or aggravate agina pectoris. Whether or not tobacco leads to permanent changes in coronary vessels has been a matter of controversy. That it would be difficult to establish as a fact such a thing as a tobacco angina is the belief of Herrell and Cusick.[7] They state that tobacco may bring about spasm in a coronary arterial tree which is already diseased and cite one case. The patient, a 54-year-old white male, was seized with an attack on July 4, 1934. Until this time he had smoked 40 cigarettes and 4 cigars daily. He ceased smoking, but had one attack suggestive of angina in 1935 and another in 1937. When he was seen in July, 1938, he was requested to inhale the smoke from a cigarette and in a short time reported substernal pain. He was told definitely never to smoke in the future.

B. J. Birk and H. H. Huber[8] cite 3 cases of

3. Hollis, Charles B.: A Consideration of Certain Respiratory Phenomena Resulting from the Use of Tobacco, Dis. of Chest **5**: 8-13.
4. Short, James J., Johnson, Harry J., Ley, Harold A.: The Effects of Tobacco Smoking on Health, J. Lab. & Clin. Med. **24**: 586-89, 1939.
5. Ballenger, Howard C.: Irritation of the Throat from Cigaret Smoke, Arch. of Otol. **29**: 115-123, 1939.
6. Hollis, Charles B.: op. cit.
7. Herrell, Wallace E., and Cusick, Paul L.: Effect of the Inhalation of Smoke on the Vascular System, with Reference to Changes in Blood Pressure, M. Clin. North America, July, 1939. Mayo Clinic Number.
8. Birk, B. J. and Huber, H. H.: Angina Pectoris and Tobacco Smoking, Wis. M. J. **38**: 733-35, 1939.

angina pectoris caused by tobacco smoking. Changes noted in electrocardiograms were so definite as to warrant presentation of cases, but this is far from being final proof.

In the first instance a married, white male, seen on January 17, 1935, complained of pain in the chest, which radiated to the left arm, on bowling, a fast pulse and "sweats" on the slightest exertion. He smoked 4 packages of cigarettes daily. An electrocardiogram showed the T-wave in Lead II to be diphasic and in Lead III inverted. Blood pressure was 142 systolic and 90 diastolic. On February 17 the patient felt better, but had suffered 2 attacks after rapid eating. At this time he stated that after smoking 3 to 5 cigarettes he became light headed, and after one cigarette, temperature in the extremities dropped to 0.4 C. An electrocardiogram taken after 24 hours of no smoking showed nothing abnormal. On February 28, 1935, with the patient smoking 5 cigarettes daily, the electrocardiogram was normal.

The second case was that of a married woman aged 40, first seen on Sept. 24, 1936. She drank 3 cups of coffee daily and a moderate amount of liquor and smoked a package and a half of cigarettess. After one cigarette in the morning she felt light-headed and weak. She complained of numbness in arms and legs, dizziness on change of posture, some precordial pain, shortness of breath and tachycardia on climbing stairs. Blood pressure was 120 systolic and 60-0 diastolic. Her skin reaction to nicotine was negative. An electrocardiogram showed evidence of myocardial damage. Tobacco was prohibited. On Nov. 3, 1936, the electrocardiogram was normal and the patient felt greatly improved.

The third case reported was that of a married man aged 38. Prior to Oct., 1933 he worked very hard and smoked from 3 to 4 packages of cigarettes daily. In October he had an attack at night lasting four hours, but improved after taking amytal and quinidine. An electrocardiogram showed inverted T-waves in Leads II and III. After two weeks in bed the patient felt well and returned to work. In January, 1934, he commenced smoking again and six weeks later had another attack. The electrocardiogram showed inversion of the T-wave in Lead III and a deep Q-wave, essentially negative. After cessation of smoking, taking moderate exercise and losing some weight, he felt fine. An electrocardiogram taken January 17, 1938 showed nothing abnormal.

Harry J. Johnson[9] studied the electrocardiagrams of 2,400 apparently healthy males to determine the effect of smoking on coronary heart disease. Two groups were used: those who admitted to smoking continuously for more than ten years and those who had never used tobacco. He found a 50 per cent. increase in abnormal electrocardiac observations among the smokers as compared with the nonsmokers. This would seem to indicate that smoking does play some part in the subsequent development of abnormal electrocardiac changes. More significant is the fact that the nonsmokers were an older group averaging 48.5 years, as compared with 47 years for the smokers. Besides the incidence of overweight was slightly higher in the nonsmoking group.

Sulzberger[10] states that some cases of certain diseases of the vascular system (thromboangiitis obliterans, angina pectoris, coronary disease), clinically long considered to be in some way connected with smoking, are manifestations of hypersensitivity in certain segments of blood vessels to circulating allergens derived from or contained in tobacco.

Whether or not an actual causal relation between tobacco and thromboangiitis obliterans can ever be established, it is an absolute necessity in the management of this disease to avoid the use of tobacco completely. The use of patented filters and the so-called denicotinized cigarettes must likewise be prohibited, as there is at present voluminous proof that the filtering and denicotinizing processes are not adequate to prevent the vasospasm associated with smoking.

Vasoconstrictive Action of Tobacco: The role of tobacco in the production of vasospasm may not be great, according to the belief expressed by Herrell and Cusick,[11] yet it is certainly not to be disregarded. Previous claims for possible effect of tobacco smoke inhalation were based upon blood pressure readings taken immediately following application of the so-called smoking test. Some investigators are reluctant to recog-

9. Johnson, Harry J.: A Study of 2,400 Electrocardiagrams of Apparently Healthy Males, J.A.M.A. **114**: 561-63, 1940.

10 Sulzberger, Marion B.: Recent Immunological Experiments in Tobacco Sensitivity, Bull. N. Y. Acad. Med. **9**: 294, 1933.

11. Herrell, Wallace E., and Cusick, Paul L.: op. cit.

nize these findings as definite proof of the vasoconstructive action of tobacco.

Herrell and Cusick gave their patients the standard smoking test. The patient does not smoke for 10 hours before the test. After a 30-minute rest, the basal blood pressure is taken. Then the individual inhales smoke of from 1 to 2 cigarettes, during which time blood pressure and pulse are recorded every 3 to 4 minutes. The investigators found an increase in diastolic blood pressure almost identical with increase noted during the cold pressor test. The systolic blood presure in a number of cases demonstrated a greater increase following inhalation of smoke than it did after application of the cold pressor test. In one group of patients there was a marked decrease in the dermal temperature of the extremities. It was also found that different brands of cigarettes vary considerably in their ability to produce vasoconstriction and that common filters did not affect the observed constrictions.

Hines and Roth of the Mayo Clinic confirmed the observations of Herrell and Cusick.

It has been fairly well established that smoking does cause peripheral vasconstriction, as indicated both by lowering of skin temperature and plethysmographic measurements showing diminished blood flow. Many observers have demonstrated that 1 to 3 cigarettes diminish skin temperature as much as 10 degrees Fahrenheit. Thirty minutes are usually required to return to normal skin temperature.

Mulinos and Shulman[12] state that peripheral vasoconstriction may be caused by the pharmacologic activity of the constituentss of cigarette smoke, by irritation and by deep inhalation, or by the effects of all three factors combined. They conclude that vasoconstriction from smoking is not due necesarily to nicotine, since smoke from "denicotinized" cigarettes used in their experiments was as effective as that from standard cigarettes in producing vasoconstriction. They suggest that irritation may be a factor. Inhalation, they found, plays an important part. "Inhalers" took but 11 puffs, while "noninhalers" took 21, yet the subjects who inhaled revealed greater and more persistent vasoconstriction. Even the same subject did not show the same degree of vascular reaction from day to day. They also bring out the fact that inhalation of smoke results in constriction of the arterioles of the forearm and hand indistinguishable from the constriction which follows deep breathing.

Abramson, Zazeela and Oppenheimer[13] observed the effects of smoking in a series of normal subjects and in a series of patients suffering from different peripheral vascular disorders. They found that a maximal response to smoking was elicited only in an extremity in which the blood vessels were neither excessively dilated nor constricted. The greatest decrease in blood flow occurred in the hand. The changes were less marked in the foot and leg, and there was no change in the forearm.

On the basis of the observations of Grant and Pearsons, the experimenters assumed that local blood flow changes in the hand were dependent to a considerable degree upon alterations in the caliber of cutaneous blood vessels, whereas in the forearm the muscle vessels play the dominant role. If these assumptions are correct and if the muscle of the forearm can be representative of similar tissue elsewhere at the periphery, then the statement can tentatively be made that smoking causes constriction of the arteries of the skin, but apparently has little, if any, effect upon those in the voluntary muscle.

Judging from these results, it would seem that the usual statement that smoking causes a decrease in peripheral blood flow should be modified to indicate that the decrease probably takes place only in the blood vessels of the skin, and not in the voluntary muscle. Constrictor response to smoking observed in the hand cannot be considered as typical of reactions of blood vessels elsewhere in the body.

Tobacco and Ocular Spasmogenic Tendency: Certain types of individuals apparently are subject to smooth muscle spasm. Robert Lambert[14] has pointed out that among the factors which predispose toward ocular spasm is the use of tobacco.

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12. Mulinos, Michael G., and Shulman, Israel: The Effects of Cigarette Smoking and Deep Breathing on the Peripheral Vascular System, Am. J. Med. Sci. 199: 708-720.
13. Abramson, David I., Zazeela, Herman and Oppenheimer, B. S.: Plethysmographic Studies of Peripheral Blood Flow in Man. III. Effect of Smoking upon the Vascular Beds in the Hand, Forearm and Foot, Am. Heart J. 17: 194-205, 1939.
14. Lambert, Robert K.: The Spasmogenic Tendency and Its Relation to the Eyes, New York State J. Med. 334-337, Mar. 1, 1940.

Lambert cites two cases, the first that of a male, 45, a physician, who was almost completely unable to read for more than a few minutes at a time because of severe headaches and eyestrain. He was a fairly heavy smoker, consuming many cigars and a pack of cigarettes a day. Very little change was made in the patient's correction, but he was asked to eliminate tobacco and use tincture of belladonna gtts. 10 three times a day. The function of his eyes began to improve in a few days, and he was soon able to do an adequate amount of reading.

The second case was that of an irritable housewife aged 38, who had been wearing for some years a low myopic correction with slight alterations. Reading produced pain which forced her to stop. The patient herself desisted from smoking several years ago as it disagreed with her. She was referred back to the family physician and put on tincture of belladonna gtts. 10 three times a day. She was greatly helped and could read. In addition to her reading disability there were numerous neurotic manifestations; psychoanalysis was resorted to and marked improvement resulted.

Recent work from the Mayo Clinic by Herrell and Cusick confirm Lambert's report. They found that inhalation of smoke caused the arterioles of the retina to narrow. The subjects used were not allergic to tobacco.

Reaction of the Alimentary Tract to Cigarette Smoke: Studies have shown that there is considerable individual variation in toleration to tobacco as it affects the alimentary tract. In view of development of some tolerance to tobacco, it is not surprising that many chronic smokers manifest no significant changes in the activities of the stomach and colon. When the limit of tolerance is approached, one would expect these organs to be influenced. In most subjects, smoking reflexly stimulates the secretion of saliva. Acutely toxic doses of tobacco or nicotine do provoke vomiting or diarrhea. Smoking tends to cause significant gastric retention and an increase in acidity only in an occasional patient, although smokers have a tendency to hyperacidity more often than nonsmokers. Only when marked alterations in blood pressure occur does smoking affect the secretion of bile and pancreatic juice.

Three experimental patients of Schnedorf and Ivy[15] collapsed after smoking on an empty stomach, indicating that the effect of smoking on the cardiovascular system of some subjects may be sufficient to produce gastrointestinal disturbances.

Patients with stomach or intestinal ulcers are generally warned not to smoke to preclude irritating the ulcers. Not much evidence has been brought forward to support the necessity for this admonition, although abstinence from tobacco is thought by some physicians to be chiefly responsible for the alleviation of peptic ulcer.

Tobacco Allergy: That there is some protein or undetermined constituent of tobacco or its smoke to which certain people are allergic has been proven by a number of published studies. Peshkin and Landay[16] showed that a striking parallelism exists between cutaneous reactions to tobacco and those to pollen. This reaction is specific and transferable passively. His study was based on 200 afebrile nonallergic children and 164 allergic children. Sex played no role in the incidence of reactions in the various groups tested. Of the nonallergic children, 17.5 per cnt. reacted to tobacco. Of the 164 allergic children, 69.5 per cent. reacted to tobacco.

Tobacco and Cancer: Often the high frequency of cancer of the lip, tongue and throat in men as compared with women has been attributed to persistent irritation of the epithelial surfaces by tobacco tar. In constrast to the findings of Roffo, who succeeded in producing a larger number of papillomas and true malignant growths after continued application, is the report of Kanematsu Sugiura.[17]

Sugiura painted the skins of mice with combustion products of tobacco distilled over at temperatures between 100 and 900 degrees Centigrade. He produced but a single instance of squamous carcinoma among 168 Bagg albino mice that lived from 90 to 500 days. No cancerous change was produced by painting the skins of C57 black and dba mice, as well as the ears

15. Schnedorf, J. G. and Ivy, A. C.: The Effect of Tobacco Smoking on the Alimentary Tract, J.A.M.A. 112: 898-904, 1939.
16. Peshkin, M. Murray and Landay, L. H.: Cutaneous Reactions to Tobacco Antigen in Allergic and Nonallergic Children, Am. J. Dis. Child. 57: 1288-1309, 1939.
17. Sugiura, Kanematsu: Observations on Animals Painted with Tobacco Tar, Am. J. Cancer 38: 41-49, 1940.

of rats of Wistar Institute and rabbits of common stock.

It has been held by some doctors that the tar in cigarette smoke could account for lung cancer. Other doctors deny this insofar as smoke is concerned. At present there is little evidence of either a positive or negative nature.

Smoking As a Cause of Fatigue: Chronic smoking, by affecting nerves, heart, circulatory system, adrenal gland and blood sugar level can produce fatigue. Work published nearly 20 years ago showed that brain workers who smoked had less ability to respond to an increasing work load as the day wore on. In the case of athletes, reports show that the use of tobacco has a little adverse effect on endurance. In late 1938 a physician reported on six cases of extreme fatigue, some male and some female, in which all forms of treatment proved unavailing until he told his patients to stop smoking.

Shall We Smoke? Should this rather thorough inventory of possible evils resulting from smoking affect our attitude toward it? As someone has pointed out, the foregoing symptoms don't all occur at the same time, and a single minor difficulty is companionable. Accusations against tobacco as a cause *per se* of angina, cancer, or acute peripheral vasoconstriction still have to be proved. The work of Herrell and Cusick, of Sugiura and of Abramson, Zazeela and Oppenheimer would indicate that statements regarding cigarette smoke as a causative factor would have to be considerably modified.

Broadly speaking, it cannot be said that smoking within moderation has any marked deleterious effects on people in sound health. The danger lies in the degree. Ordinarily, the pleasure derived undoubtedly overbalances the possible harm.

On the other hand there is merit in sitting down occasionally and facing facts. Smoking *may* be the cause of that let-down feeling, if you have been smoking to excess, in which case cutting down is indicated.

ILLINOIS STATE MEDICAL SOCIETY COMMITTEE ON MEDICAL BENEVOLENCE

The House of Delegates of the Illinois State Medical Society at its Annual Meeting held May 21-22-23, 1940, *voted that certain changes be made in the Constitution and By-Laws to enable the Society to establish a Benevolent Fund for indigent physicians and their widows.*

The plan adopted very closely resembles the one which has been operating in Pennsylvania for the past thirty-seven years.

We are publishing herewith the personnel of the Committee together with an outline of the purposes and the power given the Committee to carry on this work.

Committee on Medical Benevolence, John S. Nagel, Chairman 185 N. Wabash, Chicago, Ill. Charles H. Hulick, Shelbyville; Clarence H. Boswell, Rockford.

PURPOSES OF THE COMMITTEE

1. To create a Benevolence Fund:
   a. Through allocation of $1.00 each year from dues of each member.
   b. Through gratuities, endowments, etc.
   c. Through the efforts of the Women's Auxiliary to the Illinois State Medical Society.

2. To investigate cases of alleged financial difficulties on the part of members, their widows or widowers.

3. When found worthy, to appropriate regular monthly benefits not to exceed $25.00 to $30.00 per month in any one case. When deemed advisable, may appropriate more over a short period of time when rehabilitation seems probable.

4. To designate the component society secretary in each county as the county chairman to submit applications from members for benefits, then to see that a questionnaire form is properly executed to give the desired information relative to the case. The councilor of the District may assist the Committee in submitting names of members, their widows or widowers, when he believes the individual is entitled to the benefits herein prescribed.

5. When it is the opinion of the Committee that the case is a worthy one and benefits should be allowed, the Chairman of the Committee should notify the Secretary of the State Medical Society, stating the amount agreed upon as the regular allowance, stating the intervals at which the benefits shall be paid, so that proper vouchers may be submitted.

THE INVESTIGATIONS

When it is reported to the Committee that a member, widow or widower of a member is needy and unable to secure the necessities of life, a questionnaire form shall be submitted from the Secretary's office asking for the following information:

1. A brief social history of the applicant, past and present. Data concerning reasons for being in want whenever possible, and all other pertinent information which will enable the Committee to take the proper action.
2. A brief financial history including present assets and income, sources and amount.
3. Disbursing of present resources (rent, food, clothing, etc.).
4. Statements as to probable permanency of the present distress.
5. Any possible sources of assistance such as:
   a. Relatives .....
   b. Friends .....
   c. Fraternal Organizations .....
   d. Insurance .....
   e. Pensions .....
6. Have all sources of help been solicited?
7. Additional information. Means by which influence might be exerted to find employment or some other source of income. Is there a possibility of rehabilitation? (With moderate financial assistance over a short period of time, would it be possible for the applicant to become self-supporting?)

PROCEDURE

Requests from members, their widows or widowers for assistance, if submitted to the Secretary, shall be referred to the Committee promptly. At the same time a questionnaire form will be submitted to the applicant or to the county society secretary, or to the Councilor if the information is submitted by him. All possible information which will aid the Committee in determining the eligibility for assistance, the amount actually needed, or if rehabilitation through short time payments is probable, should be submitted promptly.

Each case will receive the proper consideration by the entire committee which shall pass final judgment on:

1. Eligibility for aid.
2. The amount of aid.
3. Whether for a short time or permanently.

The decision of the Committee shall be final and there will be no higher authority within the Society to whom appeals from decisions of the Committee can be referred.

In the event that additional income is received and the individual is no longer eligible for further benefits, the county society secretary or the Councilor submitted the data, should notify the Committee of these facts promptly.

As soon as a reasonable amount is accumulated in the Benevolence Fund, only the income from the Fund shall be used to pay benefits.

The Medical Benevolence Fund shall be subject to an annual audit as are other funds of the Illinois State Medical Society, although merely the amount of the Fund, the payments made during the year, the additions to the Fund, and the interest from investments shall be mentioned. The names of beneficiaries shall not appear in the annual audit, nor shall they be mentioned in the annual report of the Committee to the House of Delegates.

The Secretary of the State Medical Society shall maintain a separate file for all correspondence relative to beneficiaries, amounts paid, investigations and minutes of meetings of the Committee, which shall be a closed file and not open to inspection by others than members of the Committee, the Auditor, or a regularly designated Committee of the House of Delegates.

As the regular vouchers of the Illinois State Medical Society are paid through the State Bank and Trust Company of Evanston, all funds for benevolence purposes shall be maintained in another bank and payments for benevolence purposes shall constitute the only vouchers drawn on these funds. The council of the Illinois State Medical Society has allocated the sum of $5,000.00 maintained in the National Bank of Monmouth for several years as a Certificate of Deposit, as the nucleus for the Benevolence Fund, and payments shall be made from this fund on this bank.

NOTE: The above report and procedure was presented to the Council of the Illinois State Medical Society in regular session on August 4, 1940, by the Chairman of the Committee on Medical Benevolence. The report and procedure

were approved, and the Committee instructed to make the necessary arrangements to function immediately. The Council was authorized by the House of Delegates at the 1940 annual meeting to approve a method of procedure so that the work could be started with a minimum amount of delay.

THE COST OF WAR

According to figures compiled by the Carnegie Endowment for International Peace, the last world war, all told, cost apart from 30,000,000 shattered lives, $400,000,000,000.

With that sum of money we could have built a $2,500 house equipped with $1,000 worth of furniture, placed it on five acres of land worth $100 an acre, and given this home to each and every family in the United States, Canada, Australia, England, Wales, Ireland, Scotland, France, Belgium, Germany and Russia.

We could have given to each city of 200,000 inhabitants and over, in each of the countries named, a $5,000,000 library, a $5,000,000 hospital, and a $10,000,000 college or university.

Out of what was left we could have set aside a sum that would, at 5 per cent, provide a decent yearly salary for an army of 125,000 teachers and a like salary for another army of 125,000 nurses.—*The Medical Bulletin.*

UTOPIAS

". . . . . *Plato it was* who first set his mind to make men better by 'choice dissertations about utopias.' He was the first, in Mr. Norman Douglas's words, 'to sit in marble halls and have a fair and fondly ardent *jeunesse dorée* reclining about (his) knees while (he) discoursed, in rounded periods concerning the salvation of their souls by means of transcendental Love.' No Platonist will swallow without protest Mr. Douglas's characterization of the founder of the Republic, but I quote it with approval here: for if, as Colerdige once observed, all men are born either Platonists or Aristotelians, then few physicians are in the former category." . . . . . Medicine in Utopia, Herbert Silvette. Bull. Hist. Med. VII; 1013, November, 1939.

PREFER LOTTERIES TO M. D.'s

One third of the nation, according to the Government, can't pay its doctors. Yet 47 per cent of those in the lower-income brackets, and 45 per cent of reliefers, had funds to gamble during the past year, a national survey by the American Institute of Public Opinion shows. The money of these medically-indigent went to operators of lotteries, punchboards, slot machines, card games, election bets.—*Medical Economics.*

PATIENTS' ABILITY TO PAY

The average American wage-earning family which lives in a city spends $40.12 a year — less than 2.7 per cent of its income — for medical services. This covers the care of three persons, with a median annual income of $15.15.

So reports the U. S. Bureau of Labor Statistics, after surveying the expenses of 14,469 self-supporting families in forty-two cities. The group's annual earnings ranged from $500 to over $3000.

Food, housing, clothing, transportation, fuel, recreation, furnishings, and household operations were found to take precedence over medical service in the budget. Apart from the necessities, the average home visited spends $87 yearly, or more than twice its doctor's bill — on its automobile. What it lavishes on cameras, radios, movies, ball games, amusements, newspapers, tobacco, and play is likewise almost double what it pays its physician.

Of every dollar expended on health, 22 cents was discovered to go for medicines, eyeglasses, and appliances; 10 cents for hospitalization; and 68 cents for other medical services, including the doctor.—*St. Clair Co. Medical Bulletin.*

Increasing industrialization has been accompanied by a decline in mortality from tuberculosis, probably because of the general improvement in standards of living for the bulk of the people brought about by industrialization. Density of population itself does not determine the mortality from tuberculosis but there is some causal factor probably connected with crowding and social environment. For the time being at least the level of mortality from tuberculosis may be considered an index of hygienic and social culture. By this standard the United States ranks first among the world states even when the high mortality of the Negroes is included. Geo. Wolff, M.D., Amer. Rev. of Tuber., July, 1940.

All we got out of the last war was widows and orphans, heartbroken mothers, crippled men, influenza, prohibition, income tax, cooties, and uncollectible debts. What else is there that we don't want and can assuredly get by horning in on another fracas "over there?"—*St. Clair Co. Medical Bulletin.*

Dogs may be infected under natural conditions with tubercle bacilli of the human and bovine types. A post-mortem study of 543 dogs showed an infection rate of 4.6 per cent. The bacilli were of the human type in 18 out of 22 cases which were examined bacearly sign in miliary tuberculosis. M. Leonard Gottlieb, M.D., Med. Record, Aug., 1940.

Enlargement of the spleen may be an important early sign in miliary tuberculosis. M. Leonard Gottlieb, M.D., Med. Record, Aug., 1940.

MEDICAL ECONOMICS

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The medical profession is most interested at the present time in the trial of the American Medical Association and its officers in the District Court of the United States in the District of Columbia. While this subject has received little mention in the public press, it is being reported in detail in the *Journal of the American Medical Association* in the Organization Section, where it can and should be read by every medical man in the state of Illinois as well as the rest of the United States. From that meager information available to the writer, this trial is expected to be quite lengthy and may be of considerable importance as it is one of the first cases in which violation of the Sherman Act by a group not definitely in trade is being carried to completion. Most of cases have been settled by consent decrees in which the defendants have agreed to make the changes desired by the Government and by so doing, little or no penalty is imposed. So if you can possibly spare the time, read the complete report of the proceedings in the case as published each week. It will be most interesting and at the same time instructive for it will show the desire and intention of the government in a way different from that in which it has been presented up to this time.

Second in interest, only to the above, is that of the medical profession in the examination of men under the Selective Service Act. This is a large undertaking which has been placed in the lap of the medical profession, particularly those over the age of 35 years. Without much assistance as to direction and almost completely without physical equipment, the medical profession were asked to step up and assume the responsibility for the examination and selection of those physically fit for military service. And to their credit, it must be said that they have done the work in a creditable manner, even though they were obliged to do much of the work in their own offices, often at the inconvenience of their patients and themselves. In the rare instances, in which mass or group examination were made, most if not all of the equipment was furnished by the individual physicians. This has been reported to those men in control of the Selective Service work, both local and state and while they have admitted that the work was started without adequate preparation, they have as yet been unable to do more than sympathize with the medical profession and promise to correct some of the defects of the present system, which have been presented to them. The medical profession is ready and willing to keep the promise made in New York last June at the annual meeting of the House of Delegates of the American Medical Association, but to do the work in the best possible manner, they must have the active cooperation of the officers in charge of the Selective Service Act. These officers must listen to the suggestions of the men making the examinations, if they are to receive the right kind of men into the army, through the Induction Boards. The same standards must be required by both boards, if unwarranted criticism is to be avoided. We understand that regional meetings for the instruction of members of local Draft Boards are to be held early in February for this purpose.

The attendance of the National Conference on Medical Service, formerly The Northwest Regional Conference, was the largest in its history. 26 states were represented. The medical profession of Illinois was well represented in attendance, among the officers as well as in the discussions. Our own Secretary, Harold Camp was elected President for the coming year. The morning was given over to discussion of Voluntary Group Medical Care Programs in various parts of the United States and Medical Preparedness. It was soon evident that the last word had not been spoken on either of these subjects for there was great difference of opinion by the different speakers. Colonel Rowntree, Chief, Medical Division, Selective Service System, Washington, D. C., gave some very interesting information as to the results so far in the examina-

tion of men under the act. He approved of the work of the medical profession and hoped to have some of the difficulties ironed out in the near future.

Legislative problems, state and national were discussed in the afternoon. Dr. E. H. Cary made the statement that a new Wagner Bill was on the way, but at present it was not definitely known whether or not it would carry the name of the Senator from New York or that of another but in any event the writer would be the same, and the sponsorship would continue. So we must not become complacent and satisfied that all reform measures have been forgotten in passing 1776.

Dr. Douglass Hubble in a recent issue of *Lancet* wrote the following:

"It (National Health Insurance) fails to give a complete health service to the worker or an adequate opportunity to the family doctor. Moreover, the plan is not designed primarily to improve the health of the workers, and therefore has never had a sound clinical organization; no clinical supervision is exercised and there is no attempt to see that a high clinical standard of treatment and diagnosis is maintained. It often appears that the Ministry's interest in the performance of doctors is focused on the accuracy of their records and the cost of their prescribing.

N.H.I. fails to make use of the full powers of the family doctor, neglects the hospitals, and ignores the consultants, and any health service which does these things is no health service at all."

The above is a most severe criticism of a health service which has been in operation for thirty years, by a man who admits that the system has some merits.

At the meeting of the National Conference on Medical Service, a member of this Committee, Dr. W. M. Hartman reviewed the work done by this committee on the subject of Voluntary Health Insurance as needed in Illinois under the heading of "Why are we waiting in Illinois?" This entire article is presented for your attention immediately following in this column. It will serve as a preliminary report of the Committee. A more complete one can be expected at the annual meeting in Chicago in May. Take time to read it so that you will be conversant with what has been done in the study of this problem here in Illinois and come to the annual meeting prepared to discuss it.

E. S. Hamilton

WHY ARE WE WAITING?

The Belleville Branch of the St. Clair County Medical Society, through its delegate O. C. Otrich, introduced the following resolution before The House of Delegates of the Illinois State Medical Society.

"Be it resolved, that a special committee be appointed to study the voluntary sickness insurance plans being developed by the constituent and component societies of the American Medical Association with the view of submitting to the Council, a plan for sickness insurance in Illinois.

Be it further resolved, that when the Council has approved such plan it be submitted to a regular or special meeting of the House of Delegates for its consideration.

Your Committee feels that careful consideration should be given to this subject, but is of the opinion that it should be referred to the Medical Economics Committee rather than to a special committee, and therefore recommends that the Economics Committee undertake the study of sickness insurance and the preparation of a plan for such insurance in Illinois in accordance with the recommendations contained in this resolution, and with the resolutions of the House of Delegates of the American Medical Association at its special meeting in Chicago in September, 1938."

This resolution was received by the House of Delegates who concurred in the recommendation of the committee offering the resolution, which then was referred to the Committee on Medical Economics May 4, 1939.

The Committee on Medical Economics then appointed a Sub-Committee consisting of C. H. Phifer of Chicago, C. B. Ripley of Galesburg, and W. M. Hartman of Macomb as chairman to make this special study.

The problem was a weighty one and of significant importance to every member of the medical profession in the state. In addition to securing all possible data concerning plans in operation in other states and plans under preparation for operation when the occasion or the demand appeared, it was suggested by the Council that an effort be made to determine, if pos-

sible, what the members of the medical profession in Illinois thought or felt about Sickness Insurance. To this end a simple short form questionnaire was prepared and sent to the secretaries of all County Medical Societies in the state.

The returns from this study, while small, were interesting. 48% of those solicited answered and returned their questionnaires, which may be used as an index of the interest or lack of interest in the subject on the part of the medical profession. The counties with large cities were the ones who failed to interest themselves in the questionnaires, strange as that may seem. One certainly would expect industrial centers to have some demand for Sickness Insurance. Cook County for example failed to reply.

It became increasingly apparent as the replies came in that there was confusion in the minds of our members as to just what was meant by Sickness Insurance. Plans for Sickness Insurances were repeatedly confused with plans for Group Hospitalization.

Some secretaries failed to distinguish the difference between Voluntary and Compulsory Plans, revealing that the technical details of Sickness Insurance were new and unfamiliar.

62% of the replies stated that there was a need for Sickness Insurance. Only 44% felt that the public desired it and 57% felt that the medical profession desired it. Only one reply apparently favored State Medicine or Compulsory Health Insurance in these words, "I personally prefer Compulsory Health Insurance because poor people will not do so voluntarily. However I believe it impractical and uninforcable and therefore think that a Voluntary Plan will be best."

Several of the county secretaries had their members vote on the questionnaires with the following results: 67% felt that there was a need for Sickness Insurance, 46% said that there was a public desire and 60% voted that the medical profession desired a plan. These figures of individual members parallel very closely those of county secretaries.

The only medical service plans in operation in Illinois were the Industrial set ups in large plants, the Student Health Services in our colleges and universities and the Farm Security Administration Medical Service Plans operating in some of our counties. In every instance where a medical service plan was mentioned as being in operation or as being considered, investigation revealed that what the writer had in mind was a Group Hospitalization plan.

The survey definitely revealed that the majority of the medical profession in Illinois will favor some plan of Voluntary Sickness Insurance for low income groups, providing it is not too costly and that it can be sold.

When our committee turned to the study of the technical details of Sickness Insurance we found, as you all know so well, that publications on the subject were multitudinous, and that plans were numerous and varied in detail, and the terminology conflicting. One very important and publicly hidden fact became increasingly evident. The American Medical Profession has given more thought and study over a longer period of time to various plans of sickness insurance than those who so loudly and insistently favor them.

Sickness Insurance is far from simple. It is extremely complicated in its administration and in its legislation and for the present has no actuarial basis. Therefore the medical profession becomes the insurer in fact. The theory of Sickness Insurance and its practice are quite different.

And so our committee felt that while many plans were proposed and were being constantly altered, not only should we select a plan of real merit, but also of equal if not greater importance, we should avoid the grievous error of using a plan that had failed.

"Study should precede action. It is as dangerous to rush into plans for the reorganization of medical service without previous investigation and experiment as to follow a similar hasty adoption of untried drugs or diagnostic and therapeutic procedures. The customs, traditions, principles, and policies which have been built into the present system of medical practice closely affect the quality of medical care, to the maintenance of which the preeminence of this country in the conquest of disease and the postponement of death is largely due. These elements are constantly changing and will continue to change in the future. Organized medicine has introduced and perfected more changes than any other section of society. It will continue to experiment with such changes, but if the interests of the public are to be protected any funda-

mental change must be preceded by much the same sort of study and experiment as is used in evaluating new methods in diagnosis and treatment of the individual."

Bureau Med. Economics, A.M.A.

September 17, 1939, a special committee of the Council composed of John R. Neal, R. K. Packard, E. S. Hamilton and Harold M. Camp attended the meeting of the House of Delegates of the Michigan State Medical Society to study the Michigan Medical Service Plan which was up for final action.

This special committee reported that their study lead to the belief that this plan was the best of many then up for our attention and issued the following comment:

"Although the movement is designed to show the world that the physicians of Michigan are interested in the welfare of their citizens, and to show that they do not need any Federal control of the practice of medicine in their state, it seems quite logical to assume that governmental agencies may point to this, and many similar service plans in operation elsewhere, in their education campaign to convince the citizens and the law makers that people in low income groups are not able to procure adequate medical services, and use this as an additional argument favorable to a socialization plan for the entire country."

It appeared to our committees that there was some question as to just how much demand exists in Illinois for Sickness Insurance, and that such demand should be determined in a more definite manner with greater detail before action was taken. In other words do the people want a plan? It also was desirable to have a wider and clearer knowledge and a better understanding of Sickness Insurance among the doctors of the state as well as by the general public. And also we desired a better, more experienced background of successful operation of plans to serve as a basis for our participation. There was much evidence of great difficulty in selling these plans and of the need of making many necessary and constant changes in details as shown for example by New Jersey, the plan-a-month state. And lastly because of the many excellent try outs of carefully elaborated plans under way in our sister states we are continuing our studies, hoping to be able to avoid their errors, if any, and to benefit by their successes, thereby obtaining the nearest approach to the ideally perfect Medical Service Plan — that one which in no way interferes or tends to interfere with the quality of the service. That is why we are waiting.

W. M. Hartman, Macomb, Ill.

Correspondence

OUR ANNUAL CONVENTION OF WOMAN'S AUXILIARY

To the Editor:

The growth of every worth while organization is entirely dependent upon its Success. Did it ever occur to you what the true meaning of that word, "Success" embraces? It is nothing more or less than, "the satisfactory completion of a Worthy Program," not a series of events that will benefit one or two individuals but a succession of useful projects, which will supply much help to people far beyond the limits of its membership. That is the purpose of our Auxiliary. It is our duty as a society to assist in the constructive development of a healthy and sound medical program for the people of our state, to formulate new plans, and construct new ideas, which will materially aid the State Medical Society as it meets new demands in this ever changing maelstrum of human suffering.

Our Auxiliary is like a huge industry having its central headquarters and many branches, each with its own experimental laboratory. The State Medical Society is constructed upon the same order. Each one of these branches, or experimental stations, is the place where the young theories are put into practice and tested before they are reported. Some will be applicable in practice, others will fail but if, out of the myriad of ideas which may be offered each year there comes one or two plans which prove worth while, our existence is richly justified.

Each year the President calls a meeting where reports are read and plans are discussed. If they have proven to be desirable they are adopted in the best interests of the state and for the betterment of the people of Illinois. This is an important meeting, one in which medicine is permitted to grow, one where history is often made. It has been called, "The Annual Convention" but it is far more than that, because usage has constructed in our minds a "Convention" to be a

time of gaity, entertainment, and good fellowship. Never in the history of all medicine have such grave problems faced the healing profession and the sick.

It is true, this convention will have its gay spots, its entertainments and happy moments but down deep in the purpose of the meeting, of this year, is a determination to go forward in a stride and with a speed comparable to the rapidly changing problems of a chaotic and hysterical society. These are the issues we must face if we are to survive as a useful organization beyond the portals of a social club. We must do our part in the best interests of our suffering neighbors. We must meet the demands for the sake of that noble profession to which we have dedicated our lives; Medicine.

The Annual Convention is to be held at the Palmer House in Chicago on May 20th and 21st, 1941. Your state officers have made arrangements to make this the most outstanding convention in our history. The program is not yet complete but enough has been accomplished to assure the members of our State Auxiliary of comfortable quarters close to the center of all activities. Good entertainment is being contracted, adequate facilities have been engaged for all who can attend, while an active program has been constructed that will do honor to our auxiliary and inspire a wholesome progress, benefiting the people of this prairie state for years to come.

Mrs. C. W. Stuart
Chairman, Press & Publicity

FEBRUARY REPORT
EDUCATIONAL COMMITTEE

SPEAKERS BUREAU:

41 — Talks were scheduled through the Committee for many types of lay organizations.

One doctor gave a talk on "The Heart" before the Sophomore Class of 750 students in one of the large high schools and the Committee furnished copies of one of its articles "The Ace of Hearts" for distribution to all students. Comments from the chairman are interesting — "I delayed writing to you until I had made a satisfactory check-up at school through the health teachers. The report was that the students appreciated the talk greatly. The 'bulletins' were distributed after the lecture in the various classes, and read with real interest. Many mothers have told me of the fine summaries of the doctor's lecture their children gave at the dinner tables that evening. They appreciated this sort of education. They also mentioned having read the bulletins on Heart that the children brought home. The 800 bulletins reached a much larger audience than I had ever hoped. Thank you for your help in this effort."

Programs were given in Chicago, Decatur, Elmwood Park, Mineral, Joliet, Kankakee, Kewanee, Chatsworth, Charleston, Cary, Evanston, Lincoln, Atlanta, Congress Park, Freeburg, Belleville, Macomb, Peoria, Galesburg.

One of the talks was before 550 teachers attending a county teachers institute and the superintendent reported — "Doctor T.'s command of his subject is well rounded and his delivery is exceptional. He handled the subject very, very well."

POST-GRADUATE EDUCATION:

Post-graduate Conferences have been scheduled as follows —

April 3 — Carbondale
April 9 — Joliet
April 24 — Galesburg

The programs are well under way and it is hoped that early publicity and the very evident interest on the part of those in charge of these conferences will bring a good attendance.

SCIENTIFIC SERVICE ACTIVITIES:

30 — Scientific programs were scheduled through the Committee. The following counties were assisted:—

Vermilion, Williamson, Perry, Bond, Will-Grundy, Madison, Winnebago, Effingham, McLean, Kankakee, Jersey-Greene, Rock Island, Knox, Lee, Henry, Stephenson, Franklin, LaSalle, Edgar, Douglas.

Aid to County Medical Societies:—

162	— Notices	prepared	for	Effingham County
99	— "	"	"	Perry
50	— "	"	"	Jersey-Greene
170	— "	"	"	Knox
143	— "	"	"	Lee
189	— "	"	"	Henry
141	— "	"	"	Franklin
100	— "	"	"	Bureau
302	— "	"	"	LaSalle
1,356				

Special Newspaper Publicity for Medical Meetings:—

72	— Releases	for	Effingham County
25	— "	"	Jersey-Greene
27	— "	"	Henry
37	— "	"	Lee
27	— "	"	Franklin
48	— "	"	Bureau
45	— "	"	La Salle
4	— "	"	North Shore Branch

PRESS SERVICE:

365 — Health columns furnished newspapers.
532 — Editorial style health columns furnished newspapers.
4,490 — Editorial articles to lay leaders throughout the state.

(requests from 6 additional people in the month)

500 — Articles sent to Chicago Teachers College to be used by students in Health Education Class.

150 — Articles sent to Health Chairman of a PTA who distributes material to all members attending meetings and gives any remaining to the health education teacher of the school.

Articles written and approved by Committee for release to newspapers and to mailing list—

Medical Profession and Preparedness	Health Quiz
Tuberculosis	Pneumonia & the Common Cold
The Ides of March	The Good Old Days
Children & Their Skin Ailments	Tributes to Medical Heroes
Be Optimistic About Cancer	Through a Looking Glass

MISCELLANEOUS:—

26 — Letters written to Catholic schools offering health programs.

34 — Letters and notices to Chicago Hospitals re National Health Conference.

107 — Letters to Secretaries concerning program for Secretaries' Conference at Annual Meeting.

186 — Letters to Presidents and Secretaries concerning Pneumonia Programs.

300 — Notices released announcing Chicago Medical Society Public meeting on Cancer.

Letter telling about Summer Round-Up sent to Presidents and Secretaries of county and branch societies.

Letters sent to Summer Round-Up Chairmen urging them to contact officers of their medical societies before making plans for examination of pre-school children.

RADIO:—

Radio programs are being given over stations WJJD and WAAF. The dialogues over WAAF, prepared by Mrs. S. C. Kehl, wife of a Chicago physician, from the material furnished her by the Educational Committee, are very popular. The material is presented usually by Mrs. Kehl and some member of the Chicago Medical Society. The dialogue is breezy, full of good information, and on subjects of current interest.

On March 29th — 1:30, WAAF, Mrs. Kehl and Miss Specht a Health Supervisor for the Chicago Board of Education are giving a very fine program on ACNE. The Chicago schools are having announcements of the program given and notices will be published in all the school papers.

Respectfully submitted,
Jean McArthur

AMERICAN SOCIETY FOR THE CONTROL OF CANCER

In April the American Society for the Control of Cancer, through its Women's Field Army, will conduct in Illinois the annual enlistment campaign for members in the latter organization. There are several reasons why this event should be of peculiar interest to members of the profession.

First: The American Society for the Control of Cancer for twenty-eight years has worked with and through the profession to lay the foundation for the cooperation of lay and professional groups in a continuing campaign for cancer control. The Society is pledged to a policy of medical leadership and domination in its advisory and executive bodies. In this respect it differs from almost all national organizations whose chief aim is the education of the laity.

Second: In States where the Women's Field Army's program is best developed there is clear and unmistakable evidence that there has been a great increase in the number and proportion of early cancerous and precancerous lesions reporting for diagnosis and treatment. This has been accomplished with out any increase in hysteria or cancerphobia. In fact these symptoms have definitely decreased as the educational campaign progresses.

Third: In States where the medical profession, as an organization and as individuals, has cooperated most fully there has been no adverse criticism or accusations of unethical procedure. Actually the results have been quite the opposite and both the profession and the medical auxiliaries have benefitted in good will and public support.

Fourth: The American Medical Association heartily and unreservedly endorses the movement because after careful preliminary study supplemented by observation of accomplished results it recognizes the sincerity of its aims and the value of its achievements.

As yet Illinois is in the early stages of organization which is not surprising because of its great size and the impressive bulk of its population.

It is hoped that this and each succeeding year will find a marked and rapid increase in the numbers of the profession and the auxiliary who assume active roles in the furtherance of this great national humanitarian program.

NEW JOURNAL CANCER RESEARCH

The first number of the new journal, CANCER RESEARCH, contains 13 original articles and 241 abstracts of papers published in the latter half of 1940. Designed primarily as a monthly journal of articles and abstracts reporting results of research on cancer the new publication plans to make information available to laboratory workers, clinicians, and all persons concerned with the attack on malignant disease.

The subjects of the original articles include the following: the experimental production of cancer of the liver in rats by feeding butter-yellow, an azo dye; immunity against a cancer of rabbits; differences between malignant blood cells from induced and spontaneous leukemias in mice; stimulation and retardation of the action of cancer-producing chemicals in association with other compounds; an experimental method for removing cancer in rats by chemosurgery; tumors of guinea pigs; the effects of various hormones on the production and characteristics of can-

cers; and the excretion of sex hormones by women with cancer of the breast.

Eight of these articles were written by investigators working in this country, four by workers in England, and one by an author in Italy.

Of the total of 241 abstracts, 78 report summaries of cancer research papers, 11 are on statistical and general subjects, and 152 abstracts or citations deal with clinical reports. The journal intends to serve the interests of clinicians by providing a bibliography with short abstracts of all published clinical and pathological reports.

The need for this new journal has arisen because other journals in the field are being prevented by the war and other conditions from meeting the needs of prompt publication of an increasing volume of reports of cancer research. During the past twenty years there has been a great development of interests in the cancer problem as shown by the number of workers attracted to the field and by the increased financial support which has become available for the work. The resultant larger volume of reports of fundamental investigations has emphasized the need for improved facilities for prompt and economical publication. The increase in number of workers and the increase in number of institutions and laboratories engaged in cancer research also increases the need for pooling information in order to advance esssential cooperation in the attack on the problem. In response to these needs three Foundations, The International Cancer Research Foundation, The Anna Fuller Fund, and The Jane Coffin Childs Memorial Fund for Medical Research have entered into cooperation with the American Asssociation for Cancer Research in launching this new journal.

The management of the journal is planned to be as economical as possible, based on the experience of another successful scientific journal. The subscription price to members of the Association is $5.00; for those who are not members and for institutions and libraries the subscription rate is $7.00. The business office is at 1620 Lincoln-Liberty Building, Philadelphia. The editorial office is at 333 Cedar Street, New Haven, Connecticut.

THE VALUE OF THE MILK INDUSTRY

The value of the milk industry to the nation's economic system is visualized in a new book issued by the Milk Industry Foundation illustrating how the annual U. S. milk supply of nearly 51 billion quarts is utilized.

Fluid or fresh milk for cities and villages, providing the farmer's highest cash return, accounts for 29.9 per cent of the country's yearly production. Creamery butter takes 31.6 per cent, farm butter — 9.2 per cent, while 11.7 per cent of the milk used as fluid milk on farms where produced. In making cheese 6.3 per cent of the total milk is used; ice cream — 3.1 per cent and canned milks — 4.5 per cent, according to charts.

A chart of the distributors milk dollar shows 52.31 per cent going to dairy farmers for milk; 19.24 per cent to delivery labor; 8.21 to delivery expense; 6.33 — plant expense; 4.94 — plant labor; 2.78 — administrative labor; 2.18 — administrative expense; 1.68 — office labor; and profit 2.33 per cent, representing only a fraction of a cent per quart of milk.

"One out of every fifteen families in the U. S.," the MILK FACTS book says, "is dependent on milk for a livelihood and milk is the largest single source of farm cash income, larger than cattle, twice cotton, three times wheat, five times tobacco. There are 25 million cows on three quarters of the nation's 7 million farms.

"Milk and its products comprise over 25 per cent of the 1500 pounds of the principal foods consumed each year by the average American. Forty-five million quarts of milk are delivered daily to homes and stores.

The book contains many other facts by states about cows, farmers that furnish the milk and distributors whose efficiency has made the American milk distributing system a world standard.

EXAMINATIONS AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY

The general oral and pathological examinations (Part II) for all candidates (Groups A and B) will be conducted at Cleveland, Ohio, by the entire Board from Wednesday, May 28, to Monday, June 2, 1941, inclusive, prior to the opening of the annual meeting of the American Medical Association in Cleveland, Ohio.

Formal notice of the time and place of these examinations will be sent each candidate several weeks in advance of the examination dates.

Candidates for *reexamination* in Part II must make written application to the Secretary's Office before April 15, 1941.

The Board requests that all prospective candidates who plan to submit applications in the near future request and use the new application form which has this year been inaugurated by the Board. The Secretary will be glad to furnish these forms upon request, together with information regarding Board requirements. Address Dr. Paul Titus, Secretary, 1015 Highland Building, Pittsburgh (6), Pennsylvania.

"For my part I am still unconvinced that the family doctor is an anachronism. I still want somebody to save me from unsuitable or excessive specialist advice; I need someone to coordinate the findings of specialists and discount them if necessary; and above all I want someone who is willing to talk to me, at length, about my migraine, my little boy's delinquencies, my wife's recent strangeness, my baby's inoculation, and my daughter's desire to marry a man with asthma." Lancet. Copied by the New York State Jour. of Med., Jan. 1940.

OH, DOCTOR! MY FEET

New opportunities are suggested to the general practitioner, orthopedist, and roentgenologist by Dr. Dudley J. Morton, Columbia University professor of anatomy, in his new book, "Oh, Doctor! My Feet!" In it he reveals a new theory of the causes and treatment of foot troubles from which an estimated 50,000,000 Americans are suffering.

Fallen arches are a rarity and there's "no such animal as a metatarsal arch," says Dr. Morton. But there is hypertrophy of the metatarsal bones due to structural defects directly responsible for the foot troubles commonly ascribed to fallen arches and weak muscles. Refuting the forty-year-old concept of an arch extending between the front ends of the first and fifth metatarsals, with the second, third, and fourth bones relieved of weight by ligaments and muscles that hold them arched, the author contends that each metatarsal supports its share of weight in the ratio of 2-1-1-1-1, with the big toe taking the extra load.

When the big toe metatarsal is too short to carry its proportion of the weight, additional strain is thrown upon the others, a condition which may be properly diagnosed only by x-ray. The vertical view is of greatest importance, he says.

Treatment consists of rest, contrast plunges, and the use of a specially designed insole to be prescribed by a physician. Dr. Morton points out that only general practitioners, because of their number, can cope with a problem of such magnitude — fifty million patients — with the orthopedist handling the more difficult cases and the roentgenologist providing the means for diagnosis.—*Victor News.*

FIND SPOTTED FEVER SERUM

WASHINGTON—Serum that may prove a cure for Rocky Mountain spotted fever, the tick-borne disease that every summer threatens ranchers in the far West and suburbanites on the Eastern seaboard, has been made by Dr. Norman H. Topping, National Institute of Health of the U. S. Public Health Service.

The serum, so far used only on guinea pigs and monkeys, is "the first definite hope of a specific treatment for Rocky Mountain spotted fever," officials of the National Institute of Health declared.

Guinea pigs and monkeys survived usually fatal doses of spotted fever virus when treated after they became sick with blood serum from rabbits that had been immunized to the virus. Details of the preparation of the serum are reported by Dr. Topping in the current issue of Public Health Reports.

Public health officials hope the serum will prove as useful in treating sick humans.

USE CHEMICAL TO RELIEVE VERTIGO

ROCHESTER, Minn.—A new chemical treatment that brings swift relief from acute attacks of Ménière's disease has been announced by Drs. C. H. Sheldon and B. T. Horton, of the Mayo Clinic here.

The chemical, histamine, is used in the new treatment developed at the Mayo Clinic. Histamine acid phosphate dissolved in salt solution is injected into a vein, the injection taking about one and one-half hours.

"The first patient so treated, who had been confined to bed for a period of three weeks because of Ménière's disease, was promptly relieved of all symptoms and was able to get up immediately after the injection was stopped and walk about in a perfectly normal maner," Drs. Sheldon and Horton report.

A brain operation in which the nerve of hearing on the affected side is cut has been a successful, if drastic, method of relieving the condition completely. Medical treatment using ammonium chloride and a low salt diet has also been reported to give good results. But the "almost immediate response to treatment with histamine makes this method particularly valuable when the vertigo is of great violence and the vomiting severe," Dr. H. W. Woltman points out.—*Victor News*

Occupational exposure of hospital personnel to tuberculosis does not increase the disease or death rates except among nurses who enter training in the tuberculin-negative stage. Leopold Brahdy, M.D., Jour. of Amer. Med. Assn., Jan. 13, 1940.

At the present time the greatest need for health action is where the greatest saving of life and suffering can be made. Here I would place first, finishing the job in the control of tuberculosis. Thomas Parran, M.D., Surgeon-General, Hospitals, Aug., 1940.

The large number of cases of tuberculosis in the later age groups represents an accumulation which started in adolescence and early adult life. J. Burns Amberson, Jr., M.D.

A silk hat has been known to change a man's whole character. It is perhaps more responsible than anything else for the peculiar actions of the United States Senate. Nearly every senator wears a silk hat, and such an atrocity can't help affecting his mind. If all the senators would wear caps, the innovation might change the whole course of the nation's history.—*St. Clair Co. Medical Bulletin.*

THE CAUTIOUS RACE

Sandy Hoyle, negro janitor of The Advocate, listened to a discussion by the foreman and the intelligent compositor on the commercial possibilities of the aeroplane. Sandy seemed deeply interested, but at the close of the conversation, he shook his head solemnly and said:

"White folks may do great things with them flying machines, but one thing I knows fo' sutin — they won't never need no Jim Crow cars on 'em."—*Greenfield Advocate.*

Original Articles

ENTERIC INTRAMURAL HERNIATION FOLLOWING COLOSTOMY

GEORGE J. RUKSTINAT, M.D.*
CHESTER B. THRIFT, M.D. AND
FRANK M. SYLVESTER, M.D.
CHICAGO

A comprehensive report of ventral hernias and prolapse as late complications of colostomy was made by Gabriel and Lloyd Davis[1] in 1935. Their study was based on 500 cases of palliative colostomy performed in 24 years at St. Mark's Hospital, London. Ventral hernias occurred in less than ten per cent. of the cases. A slightly greater incidence existed in left iliac colostomies compared with those brought out through the left rectus muscle. The largest hernias occurred when incision was made at the outer border of the rectus and when the cup variety of belt was worn by the patient. Prolapse as a late complication of colostomy existed in only 12 of the 500 cases in the series. As in rectal prolapse, it was found that a colostomy prolapse may be complete involving the entire thickness of the colon, or incomplete, involving only the mucous membrane. The eversion occurred mostly from the upper and only occasionally from the lower or both openings. The authors stated that a prolapse is "always associated with a patulous opening in the abdominal wall."

The first report of herniation of small intestine into a prolapse of the large bowel was made by Gosset[2]. On the eighteenth postoperative day following the establishment of a left iliac colostomy, prolapse occurred in his patient. A tumor developed symmetrically at the level of the median part of the artificial anus resulting in two lateral intestinal orifices. Strangulation of small intestine into the large intestine happened after one year.

Usteri's[3] and Bodé's[4] cases included a double hernia composed of an eventration of the abdominal wall and intestine adhering to the skin containing the cecum within a peritoneal fold. Guibé's[5] patient had a double hernia composed of small intestine herniated and strangulated into a prolapsed loop of colon at the level of the artificial anus. Eversion occurred several months following the formation of an artificial anus. In the two instances of cecal anus discussed, the condition developed five and one-half years following operation. The prolapse commenced on the eighteenth postoperative day in Gosset's patient and, in Bodé's, developed slowly. In Usteri's patient, a small descensus was noted directly after the operation. The time of occurrence, therefore, varied. The patients were beyond 50 years of age. The types of lesions present were: cancer of the sigmoid, two; multiple pelvic adhesions, one; and syphilis of the rectum, one. A common etiology was a plethoric type of abdomen, with constipation and accumulation of a large quantity of fecal material in the large intestine.

In 1925, Greenslade and Hall[6] reported a prolapse of the distal loop of a colostomy composed of the sigmoid for nine inches. Diverticu-

Figure 1: Gross necropsy specimen illustrating the prolapse of the colon, A, from the proximal colostomy opening.

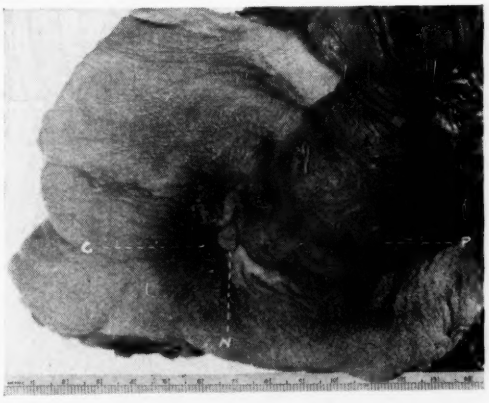

Figure 2: Illustrating the nubbin of scar tissue adjacent to the distal colostomy opening, N. The opening of the distal colonic loop of the colostomy, C, conveyed urine to the skin surface during the acts of urination and defecation. The prolapsed proximal loop, P, has been lifted to permit visualization of the distal opening.

*From the Norman Bridge Pathological Laboratory, Rush Medical College of the University of Chicago.

litis of the colon evidently had been regarded as an inoperable carcinoma. The 75 year old patient had had a colostomy 20 years previously. The colon distal to the colostomy opening was edematous, congested, and dilated; the remaining portion was contracted and empty. The authors concluded that the tension of the distal portion of the colon initiated a retroperistaltic wave, as demonstrated by Cannon, which might cause an eversion of a portion of the mucosa, plugging the lumen of the bowel, initiating a rise in tension. In forcing a passage through this barrier of mucosa, further eversion results. In the proximal loop, normal peristalitc action facilitates sliding of the mucosa or, indeed, the entire bowel, when a relaxed abdominal wall, long mesentery, or external pressure from a colostomy cup helps the process.

Bevis[7] reported a simple prolapse of the proximal loop of a colostomy he had repaired. He presumed its etiology to be a long mesocolon, a freely mobile intestine, and altered innervation as a result of section of the intestine. His patient, aged 58 years, had had a left iliac colostomy for inoperable carcinoma of the rectum with metastases to the bladder and pelvic structures. Four months postoperatively, prolapse occurred and was repaired by a Mikulicz procedure.

A. Jianu, D. Théodoresco and P. Théodoru[8] reported a left iliac artificial anus established by the Maydl operation in a man 29 years of age with a stenosing lymphogranuloma of the rectum. They believed factors predisposing to eversion were a long mesentery which permitted

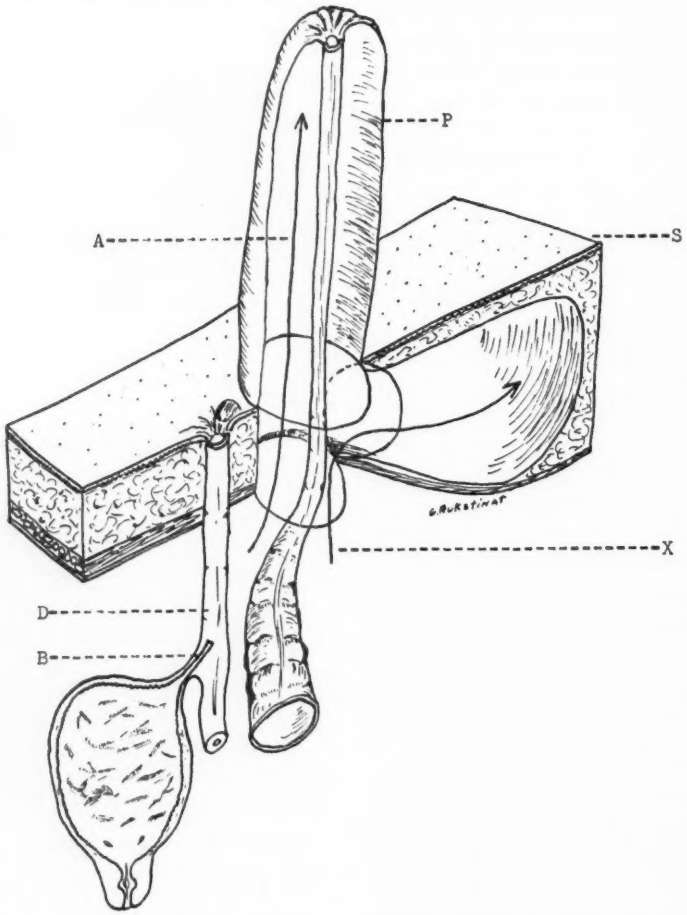

Figure 3: Schematic illustration of the skin at S, the prolapsed and evaginated proximal colostomy loop P, the distal loop D with its connection to the bladder diverticulum at B, by arrow A, the hernial cavity occupied by small bowel in the prolapsed colon pouch and by arrow X in the intramural hernia.

evagination of the intestine with a feeble abdominal wall due to technique, and suppuration. Two other patients, one aged 63 years, with ampullary carcinoma of the rectum, and one aged 30 years with stenosing lymphogranuloma of the rectum, developed a simple prolapse through the proximal colostomy opening. Prolapse developed in each one month following operation.

Thévenard[9] by special technique corrected an intestinal eversion in which the distal and proximal ends of the intestinal loop herniated through a left iliac artificial anus. Hall[10] in 1936 attributed three prolapses through the stoma of a colostomy recurring at two year intervals, to poor cooperation, a thin atrophic abdominal wall, weak fascial structures, and wound infection. Surgical correction was by insertion of a rubber tube.

Antonioli[11] in 1936 reported the prolapse of the efferent colonic loop through a left iliac anus in a man 30 years of age who, when 12 years old, had had surgical intervention for fistulae of the rectum. Three years later, stenosis of the rectum required a left iliac colostomy. Four years later the mucosa of the distal colostomy loop prolapsed and became 24 cm. long. An operation similar to Mikulicz's for the rectum bore good results.

A. Jianu[8] was indebted to Geraud, 1903, Berard and Chalier, Mercier, P. Mallet Guy, and E'tienne-Martin for their opinions of the etiology of prolapse through a colostomy. The predisposing and determining factors causing prolapse can be distinguished. The three predisposing elements are: (a) the length of the mesentery which permits the evagination of the intestine, by failure to attach as much as possible of the superior loop of mesentery and fix the intestine; (b) the weakness of the abdominal wall as a result of the technique employed, or atrophy as a sequel to suppuration provoked by the Reverdin apparatus; and (c) altered innervation of the intestine. Determining factors or different types of effort which may cause prolapse may be: (a) active, such as a violent effort at stool or sudden strain setting into motion peristaltic waves, or (b) passive, such as aspiration by a cup type of apparatus, weakened abdominal wall from acute or chronic inflammation, or constipation leading to retroperistaltic waves.

Anatomical forms of prolapse may be: (1) simple, of the mucosa, with a weak abdominal wall; (2) total, of the entire wall of the colon; (3) the small bowel in the colon; (4) the strangulated hemorrhoids, an inflammatory phenomenon rare in peritonitis or gangrene of the intestine; and (5) the small bowel in the colon, associated with ventral hernia proximal to the colostomy opening and a fistulous tract composed of the distal loop of the colostomy. The latter complication, represented by our patient, as far as we could determine has never been reported before.

CASE REPORT

P.H., a white male aged 76 years, February 21, 1939, complained of scalding urine, looseness of the bowels, and occasional drops of blood in the stools which came from a colostomy opening. Three weeks prior to his first examination there had been continued soreness in the epigastrium and pain in the right upper quadrant of the abdomen. He stated that when fecal matter passed from the colostomy, "hot water ran between the flesh and the colostomy opening." He ascribed his generalized aches, pains of the muscles, weakness, and general exhaustion to two falls he had had on the right hip and shoulder before his visit. His weight had decreased from 163 pounds to 140 within one year.

The family history is interesting. His father had died at 69 years of carcinoma of the stomach; the mother at 71 years of liver trouble with complications; a sister at 54 years of diabetes mellitus; another sister at 48 years of "leakage of the heart;" and a brother aged 60 years has diabetes mellitus.

In 1915 the patient experienced no defecation for nine days and had surgical intervention for a supposed tumor of the intestines. The pelvic mass

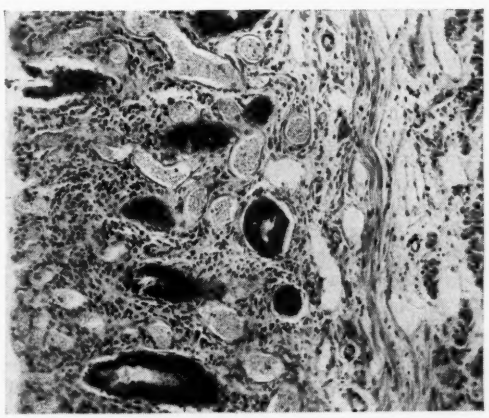

Figure 4: Illustrating at G the granulation tissue covering of the prolapsed colon; at X the remnant of a superficial gland; and at D the better preserved deeper glands.

felt at that time was not removed. A permanent colostomy was established above the involved area. In 1928, a portion of the protruding bowel from the colostomy opening was resected. In 1934 he developed diabetes mellitus and thereafter adhered to a diabetic diet. Insulin therapy never was instituted.

On admission to the Loretto Hospital, Chicago, in February 1939, he was emaciated and had a protuberant abdomen, with marked tenderness over both sternocleidomastoid muscles and enlarged discrete anterior and posterior cervical lymph nodes. The oral temperature was 99.6°F., pulse rate 92, respirations 28, and blood pressure 150/90 mm. Hg. The breath sounds in the left posterior lung fields were decreased. There were numerous râles but no dullness on percussion of either lung field. The apex of the heart was at the left anterior axillary line; the right border was 1 cm. lateral to the right sternal border. A localized systolic murmur was heard over the mitral area and apex.

The abdomen was pendulous with the proximal portion of the descending colon protruding through the colostomy opening 13 inches (32.5 cm.). Openings at the proximal and distal portions of the bowel were patent. When the bladder filled, urine passed from the distal portion of the bowel. A large indurated mass was palpated in the lower pubic region. The liver was 1 cm. below the costal arch. Induration was noted in the pyloric region. The extremities were emaciated with bilateral saphenous varicosities. The nervous system was normal except for absent bilateral patellar reflexes.

Urinalysis revealed strongly positive sugar, 4 per cent., albumin grade 2, few hyaline and granular casts, with an occasional pus cell. Roentgenograms of the pelvis revealed a distinct rarefaction through the wings of the ilia, and the ascending and descending rami of the pubis. The sacroiliac synchondrosis was normal. Arthritic changes between the first and second lumbar articulations were noted. Several areas of increased density noted through a shadow extending from above the right costal margin to a point even with the right pelvic crest, corresponded to an unusually large liver containing hard fibrous masses. In the lower pelvis a mass 3 cm. by 6 on the right aspect apparently connected with a markedly thickened bladder whose shadow extended across the entire pelvis and measured 3 cm. above the pubic crest. Above the left iliac crest a mass 3 cm. in width by 9 cm. in length extended inward 5 cm. and appeared like a thickened bowel.

Three weeks elapsed before the patient again was hospitalized with acute, cramping, upper abdominal pain. He was critically ill, extremely dehydrated, had not defecated through the colostomy for 48 hours, but had not vomited. Physical examination disclosed essentially the same findings as five weeks previously except for 100°F. oral temperature, 96 pulse rate, 24 respirations, and a large firm mass occupying the left hypochondrium to the umbilicus, on the inferior surface of which irregular nodes were palpable. This mass moved downward with respiration. Urinalysis was the same as at the first visit. Erythrocytes numbered 3,760,000; leukocytes 15,900 per cu. mm. of blood. The differential count was 92 per cent. neutrophils, 2 per cent large mononuclears, 1 per cent. mast cells, 5 per cent. lymphocytes, and 1 per cent. normoblasts. Carcinoma of the liver and stomach, and obstruction of the transverse colon were diagnosed.

The poor condition of the patient despite blood and saline transfusions precluded surgical intervention for two days. Then an upper abdominal incision revealed extensive carcinoma of the liver, pylorus, and gall bladder. Severe trauma and resulting plastic adhesions with involvement of the lymph nodes had caused an obstruction to the transvere colon 10 cm. from the beginning of the hepatic flexure. Due to the extent of the abdominal involvement, an ileocolic enterostomy was performed and the abdomen closed without drainage. On the first postoperative day there was flatus; serous fluid passed through the colostomy. The following day a dark brown liquid defecation occurred. The patient, however, became progressively weaker, developed a hypostatic bronchopneumonia, and expired on the second postoperative day.

The pertinent anatomic diagnoses were: hypostatic bronchopneumonia; primary carcinoma of the tail of the pancreas; generalized carcinoma metastases of the liver, peritoneum and biliary lymph glands; old cholecystostomy; marked extrusion of the proximal colostomy loop; herniation of the small bowel intramurally of the abdomen about the colostomy and into the protruding proximal colostomy loop; vesicocolic fistula. One midline laparotomy scar was 9 cm. long, with its upper end at the navel level. Its lower end was 15 mm. broad at the site of drainage. There was an oval scar on the left side of the abdomen 5 cm. vertically and 3.8 cm. across. Through the middle of the scar protruded a mass 17 cm. long and 7 cm. in its greatest diameter (Fig. 1). It was slightly rough outside as from fibrin. Its smooth free end had an opening that resembled an elephant's trunk. Extending medially from the scar next to this mass was an outpouching 18 mm. high, 18 mm. across and 10 mm. wide, the lateral two-thirds raised about 4 mm. above the surrounding scar. The medial one-third was depressed. A recent curved laparotomy wound was 19 cm. long, its upper end 1 cm. to the left of the midline and 6 cm. superior to the navel. This curved to the right downward, from the navel to 4 cm. to the right of the midline.

The front edge of the liver was free; tumor nodules studded at least half of the front surface. Several nodules 12 mm. in diameter were umbilicated. The great omentum was adherent by fibrinous adhesions to a line of sutures in the bowel wall. The bowel sutures involved the terminal part of the ileum and cecum.

In a hernia of the abdominal wall was a loop of small bowel 17 cm. long (Fig. 3). When the loop was removed, the trunklike protrusion from the abdominal

scar became limp and soft. The terminal part of the trunk was formed by the descending part of the colon, with its lumen narrowed to 12 mm. before its exit through the skin. Several coils of small bowel 36 cm. long occupied the interior of the trunk and easily were removed. Their course paralleled the proximal loop of the colostomy whose opening was about 4 cm. proximal to the end of the trunk.

On the inside of the laparotomy wound in the vicinity of the recent bowel suture was a recent fibrino-purulent exudate. Extending from the little nubbin of tissue (Fig. 2) medial to the protrusion on the skin was a fistulous tract which ran inward and downward about 8 cm., made a right angle, and proceeded posteriorly. The tract was composed of large bowel whose lumen was 2 mm. in diameter and entered with difficulty (Fig. 3 and 4). The bowel wall followed upward from the rectum was up to 6 mm. thick and heavily coated with fat in the vicinity of the urinary bladder. The most distal of the two right angles formed in this tract was due to adhesions between the sigmoid part of the colon (Fig. 5) and the loop of the small bowel. A funnel-shaped pucker in the fundus of the urinary bladder medial and anterior to the left ureteral orifice continued through the bladder wall to empty into the colon. Distal to the opening between the urinary bladder and large bowel the tract contained coarse rugae and the lumen was blocked with a mucous plug.

Histologically, the pancreatic tumor was a typical adenocarcinoma composed of acinar cell types. The metastases in the liver, peritoneum, and lymph glands were fairly consistent reproductions of the original tumor. The mucosa lining the prolapsed portion of colostomy contained normal abundant mucous glands and lymph follicles. The covering of this part of bowel was mucosa in which about one-fourth the normal glands occurred at irregular intervals. The regions of granulation tissue between them explained the pebbled red external appearance of the bowel (Fig. 4).

SUMMARY

There are reports in the literature of ventral hernias complicating colostomies, but none of the combination of ventral hernia and prolapse through a colostomy in the manner here detailed.

Four late postoperative complications of colostomy are illustrated, namely, prolapse of the proximal loop of the descending colon, hernia of the small intestine into the loop of colon. a ventral hernia containing loops of small intestine proximal to the colostomy opening, and a fistulous tract composed of the distal loop of the descending colon connected with the bladder and opening on the skin adjacent to the colostomy opening.

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THE RELATION OF MECKEL'S GANGLION TO ACCOMMODATION AND INTRAOCULAR TENSION

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Please permit me to express my appreciation for the honor you have conferred on me by inviting me to the 100th Anniversary meeting of the Illinois State Medical Association. My first contact with the medical profession of Illinois occurred some 64 years ago. It was an Illinois doctor who met the stork at that time. That busy bird may have been puzzled somewhat by interstate boundaries. He left me at the extreme western border of this state on the eastern bank of the Mississippi River at Warsaw, Illinois, within a mile of Missouri and within two miles of Iowa. Warsaw was then the western terminus of the Toledo, Peoria and Warsaw R. R. Hence, it was not strange that my first visit to a great city was a trip on that railroad to Peoria, about 1885. Not having visited Peoria in the interval, I would have been tempted to crash the gates of this meeting if you had not invited me.

The subject of this discussion might be paraphrased to read "An inquiry into the etiology of

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Eye, Ear, Nose and Throat Section, Illinois State Medical Society, May 21, 1940, Peoria.

simple chronic glaucoma and spasm of accommodation with suggestions for rhinological assistance in the successful treatment of both conditions." The universal routine treatment for the control of simple chronic glaucoma is to produce ciliary spasm by the use of myotics. There is no drug which contracts the pupil that does not also cause contraction of the ciliary musculature. Then why should local anesthesia of the region of Meckel's ganglion stop a most severe accommodative spasm and also reduce intraocular tension in glaucoma?

For better understanding let a few reminiscences trace in the background for certain clinical observations.

Medical research has created such a vast volume of detailed information that no individual physician can possibly grasp the significance of it, much less become a master in all special lines. Hence, modern research and practice has perforce taught the importance of team work in every department. Cooperation in sight-saving between the rhinologist and the ophthalmologist has been studied and practiced more in recent decades than in all the preceding centuries. The first edition of the Graefe Samisch Hanbuch für die Gesasammte Augenheilkunde when published about 1875 was a truly comprehensive treatise in seven volumes of all that was known about ophthalmic science and practice. The only two references to the nose in its index except in lachrymal duct disease pertained to nosebleed (Nasenbluten) in Basedow's disease and to the sunken nasal bridge of congenital syphilis. The Encyclopedie Francaise d'Ophtalmologie published thirty years later had more than a double column index page of references to diseases of the nasopharynx. The last thirty years have served to extend and coordinate the knowledge of the etiological relations of diseases of the nose and throat to ophthalmology in an astounding manner. More remains to be accomplished and many observations are a challenge for a better understanding of their precise significance.

It was my good fortune to become an assistant nearly forty years ago in the offices of the late Drs. John Green, M. H. Post and A. E. Ewing when the latter began referring patients with unexplained frontal headaches and even ocular pain to Dr. Greenfield Sluder who brought relief to many of them by nasal treatment. Often active disease of the nasal sinuses could be demonstrated. Sometimes the relief seemed to be related directly to shrinking of the nasal mucosa even when no lesion was apparent. Thus consideration of nose and throat diseases in ophthalmic practice became my obligation from the very beginning.

Dr. A. E. Ewing's pioneer work in this relation between ophthalmic and rhinologic practice is properly recognized by giving the name "Ewing's point" to that region of bony tenderness usually discoverable in these cases by moderate pressure of the finger in the upper inner (or nasal) angle of the orbit. Ewing's point is as significant in ophthalmology as is McBurney's point in its relation to appendicitis.

Two cases, because of certain dramatic incidents, stand out in my memory as striking illustrations of the value of recognition of tenderness at Ewing's point. They might be called the Missouri and Illinois cases because the young man came from Jefferson City and the young lady resided in Springfield, the capitols of our neighborly commonwealths, more than thirty years ago.

The young man suddenly lost his vision that morning in both eyes after a week of severe headache. After a few minutes vision was restored in the right eye but the left remained practically blind. Ocular examination revealed no reason for the loss of vision. The ocular fundus was normal and the media were normally transparent. The only diagnostic sign was the exquisite tenderness at Ewing's point. Nasal examination by Dr. Greenfield Sluder was almost negative showing only some acute swelling of the left turbinates but no tell-tale secretion. One-third of a century ago, x-ray technique was not sufficiently perfected to be dependable in the diagnosis of nasal sinus diseases. Anyway, it was too late in the day for another examination, so the patient was sent to St. Luke's Hospital for the night with Dr. Sluder's instruction for the frequent use of an alkaline nasal wash. About five o'clock the following morning a quantity of pus and blood was discharged from the nose and when the patient returned to the office for reexamination at 9 a.m., his vision was restored to normal in the affected eye. Subsequent nasal treatment made the recovery a permanent one. The case was reported by Dr. Sluder and myself to the Washington University Alumni Association as the first encountered of its type.

The young lady from Illinois had an apparent neuroretinitis in the right eye. The numerous small retinal hemorrhages and white fibrinous patches of exudates at the posterior pole strongly suggested nephritic disease. As tests revealed albumen and sugar in the urine, it is not astonishing that the eye physician who first saw this patient had given a distressingly grave prognosis as to life as well as to eyesight. However, the left eye was normal and Ewing's sign was positive on the right side. That induced questions about previous nasal disorders which revealed that she had had repeated bloody and purulent discharges from the nose and that she had been told two years before that there was an obstruction in the right side of the nose that should be removed. Nasal examination by Dr. Sluder revealed a right sphenoidal empyema. Nasal treatment provided the means for a complete recovery of the right eye. It also put an end to the apparent nephritis and diabetes.

It is easy to understand how sphenoidal empyema might cause a low grade nephritis, but whence came the glycosuria? Why should the sugar disappear from the urine when the sphenoidal sinus was drained? Perhaps your second thought has answered this question. Its probable explanation becomes apparent when the thin bony wall between the pituitary body and the sphenoidal sinus is remembered. Direct irritation of the pituitary gland by the sphenoidal inflammation readily accounts for the appearance of the glycosuria and its disappearance was promptly coincident with proper nasal treatment. The good prognosis given to this patient after nasal treatment has been confirmed by the fact that she has retained life and good vision throughout the thirty years that have passed since the incidents happened which are here reported.

These cases impress the significance of Ewing's sign when little diagnostic evidence is available as in the Missouri boy, but also that Ewing's sign must not be disregarded when laboratory tests seem to establish a different diagnosis as in the Illinois girl. These two cases emphasize the ophthalmic risk from inflammations in adjacent structures. but clinical experiences show that there are often less direct and less understandable influences of nasal origin involving ocular structures or functions.

Priority may be conceded to Berger and Tyrmann for their publication in 1886 in Wiesbaden, Germany, of a treatise on diseases of the sphenoidal sinus and the ethmoidal labyrinth and to Berger in his Thèse de Paris in 1890 for calling attention to maladies of the nasopharynx in relation to ocular diseases.

The same author, Berger, in 1905 in the Encyclopédie Francais d'Ophtalmologie wrote a comprehensive chapter on the relation of nasal and ocular disorders. He stated that "among the symptoms accompanying affections of the nasal fossa which we attribute to the trigeminus, it is necessary to mention pain in the eyeball or orbit, sensation of a foreign body in the conjunctival sac, photophobia, epiphora, blepharospasm, in certain cases episcleral and conjunctival hyperemia, troubles of accommodation, asthenopia, contraction of the visual field with occasional amblyopia, hypertension causing attacks of glaucoma." In connection with the latter Berger refers to Cheatham and Lennox-Brown, but fails to specify date or place where Cheatham's or Lennox-Brown's dissertations may be found.

Until the last decade, the relation of nose and throat conditions or diseases to ocular diseases or functions might be comprehended by (a) retrobulbar inflammation or pressure; (b) reflex nerve impulses; (c) vasomotor disturbances; (d) bacterial infections or toxins. Since then various allergic ocular reactions have been noted which apparently originate in the nose and throat. Perhaps this allergy may be included among the vasomotor or toxic effects of the earlier classification.

Our discussion concerns reflex reactions on intraocular pressure and accommodation originating in the region of Meckel's ganglion (also known as the spenopalatine ganglion or nasal ganglion). American rhinologists and ophthalmologists were introduced to many phases of these interrelations by the joint work of the late Dr. Greenfield Sluder and Dr. A. E. Ewing. Dr. George Dock in 1929 read a paper on "Sluder's Nasal Ganglion Syndrome and Its Relation to Internal Medicine" before the Section on Practice of Medicine of the American Medical Association. After referring to Sluder's publications beginning in 1908, etc., George Dock stated, "For a time the subject did not excite the curiosity of the Old World but it was then taken up with enthusiasm by French rhinol-

ogists who have made interesting contributions meeting not a little criticism from some of their compatriots. Belgian, Dutch and German rhinologists have also contributed to the anatomic and clinical problems involved, stimulated by what Goldsmith-Osmond calls the 'ausgezeichnete Beobachtungen' of Sluder." Dock adds "Certain eye symptoms were early reported; in fact, Sluder acknowledged his introduction to the subject by the late A. E. Ewing, who had Sluder relieve the pain of glaucoma by cocainization of the nasal ganglion." This followed after the earlier attempts to stop intractable headaches.

Various pains about the head were stopped by Sluder's cocainization of the nasal ganglion. Dock's statement is that "Earache may be present, referred to the mastoid region with a tender point 5 cm. back of that. Not a few such patients have had mastoid operations with negative results." This was fully confirmed in a recent personal discussion by Dr. W. E. Sauer. No doubt most Ear, Nose and Throat specialists agree with G. E. Shambaugh who advised the therapeutist to "search out and eradicate any existing focus of infection and resort to local treatment of the ganglion only when neuralgia was not relieved by other measures."

In his recent talk on Medical Quackery at St. Louis, Dr. Fishbein called attention to the perversion of Sluder's work by a Spanish healer who treated all manner of diseases without diagnostic differentiation by topical applications to the nasal ganglion. However, Doctor Dock's conclusion that "Sluder's work has not only led to much benefit in practice but has opened up a large field for investigation" is a clear challenge for repeating such discussions as the present one.

Results of Sluder's topical applications in the region of the ganglion were inconstant both as to pain and pressure, but the fact that any effect on the ocular disease could be observed, raised questions which precipitated further researches which may have much significance for future therapy in glaucoma. Investigation of the anatomical and functional relations of Meckel's ganglion made by Kuntz, Director of the Department of Microanatomy and author of the notable work "The Autonomic Nervous System," and Christensen, Assistant Professor in the same Department, produced information which L. W. Dean, Sluder's successor at Washington University believed provided an explanation for the reactions which followed Sluder's treatment.

Dr. J. F. Hardesty's coordination of available clinical evidence with the researches of Kuntz and Christensen appeared to permit the conclusion that it was the general systemic absorption rather than the local effect of the sympathicotonic drugs used in applications to or injection of Meckel's ganglion. Hardesty consistently secured reduction in intraocular hypertension by hypodermic injections of adrenalin without reference to the location of the site of injection. Hardesty noted similar results with oral administration of ephedrine or systemic alkalinization. However, recently continued observations indicate that a better approach for anesthesia of Meckel's ganglion may be found through the posterior palatine foramen; and that better results may follow the use of this technique. They indicate that there is an effect on introacular hypertension originating in the region of Meckel's ganglion when novocain solution is injected there through the posterior palatine canal that is not related to the general absorption of the drug. The reaction is similar and possibly safer and more enduring than the reduction in intraocular tension which follows orbital (retrobulbar) injections of novocain.

The first patient on whom the direct injection of novocain was used was a 19 year old, white, CCC enrollee, who had binocular simple chronic glaucoma worse in the right eye. Central vision was 20/40 R.E. with — 1.25 Sph. and 20/20 L. E. with — 0.50 Sph. The field of vision of the right eye was almost limited to a part of the upper temporal quadrant while for the left eye the outline of the field was normal. The disks appeared to have a glaucomatous cupping superimposed on deep physiological cupping; Schiotz tonometer reading was 45 mm., right and left. A drop of 1 per cent. solution of pilocarpine (alkaloid in oil) was instilled in each eye every hour and ephedrine sulphate gr. 3/8, t.i.d., by mouth was prescribed. Two days later, vision had improved to 20/30+ right and 20/15 left with correction. Schiotz tonometer reading was R.E. 35 mm., L.E. 28 mm. Physostigimine (alkaloid) in oil 1/240 was instilled in each eye and one hour later the Schiotz tonometer reading was 19 mm. for each eye. Instillations of physostigmine 1/2 per cent. solution in oil for each eye, every three hours was ordered. Treatment was thus begun August 7, 1938, and varied according to indications. It was noted, for example, that coffee seemed to increase intraocular pressure and coffee was eliminated. By September 25, central vision had improved to 20/15+ with correction for each eye but repeated relapses of intraocular hypertension and further loss in the visual fields seemed to make surgical intervention imperative.

Because of jurisdictional control he was transferred to Chicago where two months later an Elliott trephining and iridectomy was done on the right eye. The patient was returned to the St. Louis Marine Hospital on December 16, 1938, three weeks after the operation, because his vision was worse and intraocular pressure seemed as high as before. Vision which with correction had been 20/15 for each eye before the patient went to Chicago had dropped to 20/40 with correction in the eye operated on. In the left eye, which was not operated on, vision was 20/15 with correction. Schiotz tonometer reading was 45 mm. for each eye. Further loss in the area of the visual fields was noted for each eye.

After instillation of adrenalin 1/10 per cent., physostigmine 1/240, in each eye, the pressure dropped to 23.5 mm. for each eye. Frequent regular ocular medication at the hospital by instillation of adrenalin 1/10 per cent. closely controlled and followed by physostigmine 1/2 per cent. gave immediate satisfaction but not sustained reduction of intraocular tension. Hypodermic injection of splenic extract were harmlessly ineffective in this patient. Ephedrine orally seemed to be helpful for a time.

The proposal to test the possible effect of anesthesia of Meckel's ganglion by topical application according to Sluder's technique brought the suggestion from Drs. Jackson and Wikler of the U. S. Marine Hospital staff that novocain injection via the sphenopalatine canal as used in dental anesthesia be substituted. They explained that the needle could easily be carried higher than usual for dental purposes into the region of the ganglion. On December 21, an injection of 2 cc. of novocain 2 per cent solution was made at a depth of 1 3/8 inches using a 25 gauge hypodermic needle on each side. After the first injection vision improved 20/30, right and 20/12 left, and Schiotz tonometer reading was 20 mm. right and left. Continuing local instillations of epinephrine 1/10 per cent. immediately followed by eserine 1/2 per cent. for two days, the tonometer reading was 15 mm. right and 18 mm. left.

Then we tried the injection of novocain solution 2 per cent into the right sphenopalatine ganglion and alcohol into the left ganglion on December 23. You may recall that Sluder sometimes used injections of alcohol "to block" the sphenopalatine ganglion. On the following morning (December 24) central vision was 20/20 right and 20/12+ left, and the tonometer reading was R.E. 17 mm., L.E. 22 mm. Thus the subsequent reduction of intraocular tension was somewhat greater on the right side where the novocain solution had been injected into Meckel's ganglion than on the left side where alcohol had been injected. The patient went home for Christmas with instructions to continue adrenalin 1/10 per cent. and physostigmine 1/240, locally, every three or four hours. When he returned his tonometer reading was 18 mm. right and 17 mm. left.

These results vindicated the new mode of injection of the sphenopalatine ganglion via the posterior palatine foramen. While in the hospital under regular treatment repeatedly day and night, the intraocular hypertension was controlled and the outline of the field of vision was increased by 50 per cent. After injection of Meckel's ganglion, intraocular pressure could be maintained at a normal level for two or three weeks by the regular use of myotics in this patient. Then another injection of 2 cc. of 2 per cent novocain would again bring down the hypertension.

The vision was better in the eye not operated on but tonometer readings were often somewhat lower in the iridectomized eye. Because of the impaired vision after iridectomy on the right eye, surgical intervention in either eye was approached with caution, but recurrences of hypertension as soon as the frequent day and night treatment was relaxed indicated that something must be done. Otherwise, this young man was practically condemned to lifelong hospitalization.

Blepharitis, styes, and conjunctival infection contributed to a delay of several months before the actual undertaking of surgical intervention. During the waiting period various modifications of medical care were tried out. Details must be omitted. Regular local treatment with adrenalin controlled by myotics gave the best results when supplemented by injections of novocain into the region of Meckel's ganglion through the sphenopalatine canal.

Finally, on June 17, 1939, after several sterile conjunctival cultures had been obtained from the right eye which had been trephined and iridectomized, the subconjunctival winged keratome incision with clipping off of several millimeters from the corneal lip of the wound was made. No additional intraocular surgery was attempted. It was planned merely to add the benefit of the vacuolated filtering scar with corneal osmosis to the previous iridectomy. In doing so the trephine opening completely closed by a firm scar was discovered disclosing the reason for the failure of the former operation.

One week after this operation on the right eye, the tension as measured by Schiotz tonometer was only 2 mm. The left eye which was not operated on was under constant treatment and remained at 19 mm. At the end of the second week after the operation, the hypotony of the eye operated on had ceased. The Schiotz tonometer reading was right eye 18 mm. and left eye 22 mm.

The successful somewhat safer reduction of intraocular tension by this type of incision has in our experience repeatedly demonstrated its superiority over the usual trephine opening. Both are done under a large conjunctival flap. In this instance, there was no modification of the previous iridectomy. That part of the earlier operation was left untouched.

Because of its success on the right eye, the patient readily consented to having the same operation done on the left eye. On November 2, 1939, my son, Dr. Philip S. Luedde, operated on the left eye following the same technique which he had used on the right eye 4 1/2 months earlier with the addition of a basal iridectomy. The first tonometric reading on the left eye made eight days after the operation showed an

intraocular tension of 11 mm.

On December 18, 1939, when this patient was discharged from the U. S. Marine Hospital the tonometric reading was 20 mm. right and left. The patient was instructed to use adrenalin 1/10 per cent. followed at once by physostigmine 1/240, one drop in each eye, night and morning. He was seen three times after leaving the hospital and the tension remained at 18 mm. right and left as long as he continued his prophylactic treatment. If it is reasonable in preglaucomatous states to instill pilocarpine or even eserine once or twice daily, the same prophylaxis can be used advantageously after any surgical intervention for glaucoma.

The honors of the first use of the posterior palatine foramen for injection of Meckel's ganglion for glaucoma belong to Fritz R. Jackson, Passed Assistant Dental Surgeon and Abraham Wikler, Assistant Surgeon (R) U. S. P. H. S., on the Staff of the U. S. Marine Hospital of St. Louis at that time. Their technique is described in Hospital News, Vol. 6, No. 10, May 15, 1939 (Issued by Division of Marine Hospitals, etc., U. S. Public Health Service). Dr. Jackson reported that he had used injection of the posterior palatine canal more than 200 times for dental purposes. He stated that "in the presence of all the molar teeth, the posterior palatine foramen can usually be found at the level of the distal cusp of the second molar tooth, at or near the junction of the alveolar process and palate. A more precise localization of the posterior palatine foramen may be made as follows: Draw an imaginary line on the hard palate, parallel to the median raphe, bisecting the palatal half on the side to be injected; then draw another imaginary line at right angles to the first, between the second and third molars on either side. The foramen is located at or near the intersection of the two lines (figure 1). A 1⅝ inch 25 gauge hypodermic needle, with the safety stop set at 1½ inches from the tip, is used with a pressure syringe. In some cases the posterior lip of the foramen can be palpated; and in these cases there should be little difficulty in making the injection."

"The mucous membrane overlying the posterior palatine foramen can be painted with tincture of metaphen or tincture of iodine. It may then be superficially anesthetized by applying a sterile cocaine solution (10 per cent.) or the technique described by Jackson and Wikler may be followed in detail. The area is then infiltrated locally, and, with the syringe held like a pen, the region is probed until the tip of the needle is felt to enter the posterior palatine canal. Then, with the syringe held parallel to the teeth, the needle is gently inserted up to the safety stop, injecting a few drops all along, the full 2 cc. being given. In some cases it may be impossible to perform this injection because of bony spicules, tortuosity, or other anomalies of the canal."

"The first symptom noted by the patient in a successful injection is usually numbness of the corresponding half of the upper lip and the nostril on the same side. This may spread to include the entire distribution of the maxillary nerve on the face, depending on the relative depth of the injection. According to E. H. Campbell, who studied 50 skulls and 15 wet specimens, 'the distance from the palatal surface to the level of the maxillary nerve was from 4.2 to 5.4 cm., or an average of 4.7 cm'."

"In specimens injected with staining fluid at various distances, the same author found that the ganglion was saturated even at a depth of 3.5 cm., although the maxillary nerve (with which we are not concerned here) did not stain regularly. At a depth of 4 cm. Campbell found that 'the maxillary nerve was saturated in every instance as well as the ascending branches, the posterior branch, the ganglion proper, the vidian nerve, and the descending branches . . . the stain spread up the fascia around the ascending branches to reach the under surface of the orbital tissue, but the fluid did not penetrate into these tissues and did not come nearer than 0.75 cm. to the optic nerve or the ophthalmic division of the fifth.' It is to be noted, however, that these figures were based on the injection of only 1 cc. of staining fluid. It seems evident, therefore, that using 2 cc. of fluid, it is not necessary to insert the needle more than about 3.0 or 3.5 cm. to infiltrate the sphenopalatine ganglion along."

Careful search has failed to show any direct connection between Meckel's ganglion and the eye, but a large bundle of sensory (centripetal) fibers pass the ganglion. Their peripheral distribution includes most of the Schneiderian membrane. It may be that blocking those fibers by the

*(Campbell, E. H.: Anatomic studies of the sphenopalatine ganglion and the posterior palatine canal, with special reference to the use of the latter as the injection route of choice. Trans. Am. Laryn. Rhin. and Otol. Soc., (35): 118-128, 1929).

injection of novocain solution breaks a reflex arc that can influence intraocular circulation. Immediately after the injection the patient is usually conscious of its anesthetic effect on the nose and sometimes of immediate improvement of vision.

Several times the onset of simple chronic glaucoma has been noted in the wake of retrobulbar nerve or retinal damage from nasal sinus disease. Repeatedly, improvement in the visual field in cases of chronic glaucoma has followed the appropriate treatment (medical and surgical) of pathological conditions in the nasal fossa.

It is impossible to make a positive statement that "post hoc" equals "propter hoc" but a sequence such as the one recently noted, in one of his patients, by my son, Dr. Fullerton W. Luedde, is highly suggestive.

A man (P. W.) aged 62 years, presented a mild simple chronic glaucoma. Regular daily instillation of a pilocarpine solution sufficed to bring the intraocular hypertension down to normal limits and to maintain good visual acuity and normal visual fields. Gradually, as everyone has noticed in such cases, the frequency of the pilocarpine instillations had to be increased to four or five times daily. This patient had been a chronic sufferer from the annoyances which attend marked deflection of the nasal septum and he was persuaded to have this deformity corrected. The result of the septum operation performed by Dr. F. C. Simon was not only the elimination of his nasal disturbance but his intraocular tension has remained well within normal limits for many months, when only a single instillation of pilocarpine is used at bedtime. Even this might be omitted but the prophylactic use of a single drop of pilocarpine solution at bedtime in such patients is a practice that can hardly be commended too highly.

The reduction of intraocular tension by the injection of 1 or 2 cc. of a sterile 2 per cent. novocain solution into the region of the sphenopalatine ganglion is not proposed as an ultimate substitute for the more lasting surgical reduction of intraocular hypertension but it may enable the surgeon to select the most favorable conditions for such an operation.

While preparing this paper, a young man at the U. S. Marine Hospital suffering from a sympathetic ophthalmia in which atropine had been used regularly at frequent intervals daily for the control of the severe iridocyclitis, suddenly developed a glaucomatous hypertension with steamy cornea and loss of visual acuity. Injection of 2 cc. of novocain solution into the region of the ganglion brought intraocular tension down from 56 mm. Schiotz to 40 mm. The injection was repeated on the following morning and his intraocular tension was brought within normal limits. The patient stated that he was conscious of marked improvement of vision within 15 minutes after the injection made by Dr. L. E. Clawson, dental surgeon, via the posterior palatine canal. It is quite likely that surgical reduction will be required later for this patient's inflamed left eye, but just at this moment an empyema of his left antrum was revealed by x-ray examination and confirmed by surgical drainage. It is unquestionably to the best interest of this patient, whose blind injured exciting right eye was enucleated two months ago when he came in with a fulminating attack of sympathetic uveitis, to use every precaution in preparing for the surgical opening of his severely damaged sympathizing eye.

Whatever assistance injection of Meckel's ganglion can offer is a welcome addition to the therapeutic armamentarium in such cases. It is probably more effective in the presence of actual disease in the nose or accessory sinuses. That medication applied or injected into the immediate proximity of the sphenopalatine ganglion may influence intraocular tension has been demonstrated repeatedly. The detailed story of one case is more instructive than statistics. The reflex action probably reaches the sympathetic fibers which possess some vasomotor control of the vascular network of the ciliary processes.

How is accommodation concerned in this reflex arc? If the capacity of accommodation can be influenced by nasal reflexes, the time has indeed arrived when the eye physician must recognize unsuspected interlocking reflex possibilities. The necessity for comprehensive preliminary medical education for all who would save eyesight even by mechanical adjustments becomes apparent.

According to Rasmussen, "The accommodation reflex passes from the retina largely to the visual cortex and back to the superior colliculus, thence to the nucleus of the oculomotor nerve and out through this nerve to the ciliary ganglion. Here a synapse takes place and fibers arise which pass into the eyeball over the short ciliary nerves." The centrifugal impulses to the ciliary muscle are carried by parasympathetic fibers. Physiological and pharmacological research has demonstrated that the sympathetic innervates the dilating muscular fibers of the iris and also furnished some fibers to the sphincter of the pupil. These latter fibers apparently serve as a control or resistance to the parasympathetic stimuli that produce myosis.

No evidence exists that a similar dual, sympa-

thetic and parasympathetic control as is found in the iris, the heart muscle, and certain viscera, is present in the ciliary musculature, although it had been theoretically surmised. Sympathetic fibers known to be distributed to the ciliary body seem to supply only the vascular and secretory functions. In order to affect the accommodation, the reflex must travel to the eye along parasympathetic nerves through the ciliary ganglion.

Only one case is presented in which this reflex was apparently responsible for an unusually high degree of ciliary spasm. The favorable reaction to topical anesthesia of Meckel's ganglion was so striking as to leave little doubt about the clinical possibility of such a reflex. Reflex origin may be suspected in milder transient conditions of ciliary spasm or astigmatic accommodation, but they are usually so evanescent that possible origin of the reflex in the region that can be blocked at Meckel's ganglion is very difficult to trace.

Excessive accomodation may be a physiological response of the ciliary muscle to secure better vision in ametropia. When visual acuity is improved by contraction of the ciliary muscle, it must be regarded as a normal exercise of that function, though it exceeds requirements for emmetropia.

The term ciliary or accommodative spasm should be reserved for those more rarely encountered cases in which the excessive contraction of the ciliary muscle achieves no helpful purpose, but causes marked impairment of vision. True spasm usually is bilateral and of central or reflex origin. It has been reported as a part of an hysterical syndrome and as a traumatic neurosis. It is only temporarily relieved by cycloplegia.

Localized ciliary spasm may be produced by the instillation of solutions of eserine or pilocarpine. Hess declared the high measurements for accommodative spasm (13 to 18 diopters) after eserine, even in elderly persons, obtained by Lang and Barrett to be utterly incomprehensible. This is true if one holds to the hypothesis of Helmholtz for interpretation of accommodation. But it becomes entirely feasible when considered in relation to the natural physiological process of external modeling of the lens. Similarly, accommodative lenticular astigmatism which has been experimentally produced in cats' eyes, is easily explained with the latter comprehensive concept of the mechanism of accommodation.

Spasticity of the ciliary muscle involving one eye only has been reported also as occurring after ocular injury. A degree of secondary ciliary spasm and ciliary pain may be associated with spasm of the sphincter of the iris incident to corneal injury, ulceration, or infiltration. It can effectively be corrected by instillation of atropine solution.

The earlier history of our unique patient was reported by Dr. W. H. Crisp to the Colorado Ophthalmological Society, March 17, 1923. She was at that time under general treatment at a sanitarium in Denver, Colorado. She complained of attacks of defective vision which had recurred by spells for two years with increasing frequency, more particularly after much reading. Dr. Crisp found that a retinoscopic reflex simulated a myopia of 5 D. in the right eye and 7 D. in the left.

After eight instillations of atropine in three days, Dr. Crisp prescribed:

R. E. + 1.25 Sph. + 0.37 Cyl. Ax. 180°

with vision 5/4

L. E. + 1.12 Sph. + 0.25 Cyl. Ax. 180°

Three days after the atropine instillations ceased her vision with correction was less than 5/60 and retinoscopic examination showed distinct return of spasmodic pseudomyopia.

On October 20, 1923, after she had returned to Missouri, this patient Miss L. D., a school teacher, aged 21 years, reported for ocular examination on advice of her physician in St. Louis because she had had irregular spells of severely blurred vision. She presented a letter from Dr. W. H. Crisp which stated that he regarded her condition unique in the amount and constancy of accommodative spasm. She was now wearing

R. E. and L. E. + 0.75 Sph. + 0.50 Cyl. Ax. 180°

which had been prescribed by Dr. C. M. Sneed of Columbia, Mo. With these glasses her vision would vary at times from 16/200 to 16/12.

Ophthalmoscopic examination revealed no abnormal condition in fundus or media. By trial case, without cycloplegia, measurement of her refraction was the same for each eye: + 1. Sph. + 0.37 Cyl. Ax. 180° and vision with this correction equalled 16/12+. She could read comfortably with this correction except during intervening transient spells of ciliary spasm. A Maddox-rod test indicated an esophoria of one inch at 16 ft.

A nasal examination was advised to eliminate a possible reflex irritation from that region. Her physician selected Dr. Greenfield Sluder for this examination. Dr. Sluder found a double sphenoiditis and anesthetized the region of Meckel's ganglion producing complete cessation of ciliary spasm and its attendant impairment of vision for the almost unbelieveable period of six years.

At any rate, that was her report when seen again February, 1929, at which time an increase in the correction of her horizontal astigmatism was indicated and accordingly + 1.25 Cyl. Ax. 180° for each eye was prescribed, with which her vision was 20/15 for each eye.

No disturbance was encountered at this time from the ciliary spasm, but nine months later these symptoms returned in an aggravated form.

She reported on December 6, 1929, that for a few days the eyes had become unsteady and that "vision blurred out entirely" at times. With her own glasses, vision varied from 20/20 to 20/200 with either eye. An addition of — 0.50 Sph. was of doubtful benefit. Visual fields were symmetrically contracted. On ophthalmoscopic examination a view of the ocular fundus was obscured at times, but could be cleared up readily by the use of concave lenses in the ophthalmoscope, thus differentiating this spasmodic condition from organic disorders of transparency.

Unfortunately, the death of Dr. Greenfield Sluder made it impossible to have his valuable opinion on changes in the rhinological condition after an interval of six years. The patient was referred by her physician to Dr. Arthur Proetz. Four days later, Dr. Proetz reported that x-ray photographs with lipiodol as well as direct observation of secretion established a diagnosis of sphenoidal sinusitis. Local ocular treatment was continued with a daily instillation of simple borated solution to permit the necessary measurements and observations. Vision was 20/15 and the patient was quite comfortable. But after another period of four days, her vision was clear only at intervals and Dr. Proetz reported that active treatment of the sphenoidal sinusitis apparently provoked more nasal congestion, that the *greatest relief had been gained by anesthesia of Meckel's ganglion* several days before. Treatment of the sphenoidal sinuses and local applications in the region of Meckel's ganglion were complicated by a marked deformity, a double deflection of the nasal septum.

It was decided not to use atropine to suspend the ciliary spasm, as this would complicate the study of its etiology. Having found clinically in other patients that instillations of tiny droplets of pilocarpine (1/2 per cent solution) sometimes seemed to steady or lessen fatigue of the function of accommodation (as suggested personally 35 years ago by the late Dr. John Green, Sr.), such instillations were made three times a day while nasal treatment was omitted. Contrary to what might have been expected from ocular instillations of a miotic, vision remained clear for about two hours after the droplets of 1/2 per cent. solution of pilocarpine. After a temporary improvement for three or four days, blurred vision returned and now the use of pilocarpine was not followed by clearing of vision as before. Intraocular tension as measured by the Schiotz tonometer was 8 x 5.5 = 15 mm. Hg.

Again ocular treatment was omitted to permit a clear field for the effect of nasal medication. After several days Dr. Proetz decided that the surgical correction of the deformed nasal septum was most essential for successful treatment of the nasal irritation of the sphenopalatine ganglion, which seemed to be the activating influence in precipitating the ciliary spasm. Accordingly, on December 23, 1929, he made a submucous resection, and after a week vision became clear and remained so constantly without any intervening or subsequent ocular treatment. It was not found desirable to make any change in the correction for hyperopic astigmatism "against the rule" which had been prescribed a year before. Vision was 20/15 and the range of accommodation was normal for the patient's age. Letters received during the following year indicated the continuance of the favorable result thus achieved.

My experience coincides with that of Dr. Crisp, that actual ciliary spasm of the degree exhibited in this patient is unique. Vision was sometimes so suddenly impaired that she could not trust herself to cross city streets. I know of no parallel case in ophthalmic literature, in which the direct relation to the nasal condition so apparent in this patient has been recorded. Perhaps, these cases are rarely subjected to such a thorough rhinological study as was given to this patient by Dr. Greenfield Sluder and Dr. A. W. Proetz.

For six years nothing was heard from this patient. At the end of March 1936, a letter was received from Syracuse, New York, where she then resided in which she described attacks of ciliary spasm seemingly directly related to nasal inflammation during the fall of 1935. Her letter stated, "I experienced no difficulty with my eyes following Dr. Proetz's treatment six years ago until September of last year. During that time I led a strenuous life of study and work in New York City and here in Syracuse. In September my blurred vision returned spasmodically. At times it was very difficult for me to go about even in my own apartment and again my vision would be entirely clear for part of the time. Dr. Levy of the State Tower Building of this city examined my eyes and referred me to Dr. Moore of the Medical Arts Building for a possible sinus condition. Dr. Moore did not find the sinus condition severe and there was some doubt in his mind as to whether that caused the trouble with my eyes. The sinus was drained, I was hospitalized for a rest and finally late in October, when it became impossible for me to continue my work, an alternative of a prolonged rest or a sinus operation was suggested. I felt that previously I had received relief from treatment when my difficulty had been as great and since I was unable to arrange a leave of absence at that time, I went to New York City to consult Dr. MacPherson of the College of Physicians and Surgeons. In his absence, I was treated by Dr. Seagar. Three weeks later I returned to Syracuse and was able to work without any discomfort. I have had only a slight difficulty since that time. This followed a cold in December. I do not quite understand the difference in opinion of the doc-

tors here as to the cause of my difficulty, but I am thankful to be able again to keep up with my work and to be free of the fear of losing my sight. For the first time in my life I swam a great deal last summer and late in the season learned to dive. Dr. Seagar seemed to feel that that might have been a factor in the return of the old trouble."

Upon inquiry, Dr. Harry H. Levy, the ophthalmologist whom she first consulted in Syracuse, New York, kindly furnished a resume of his observations on this patient. She consulted him on October 6, 1935, complaining of severe periodic blurring of vision during the previous 24 hours. He stated, "The vision of the right eye was 8/200 with correction + 1.25 Cyl. 5: the left eye was 8/200 with a correction + 1.25 Cyl. 180°. It was noted that while recording the visual acuity, the vision was 20/20 in each eye with correction during a period of time when her attention was diverted from her eyes. The fundi were normal. Fields of vision on the perimeter were normal. Central color perception was normal in each eye during the period of clear vision. During the period of blurred vision, the responses were very indefinite and uncertain. It was my impression that the patient was suffering from ciliary spasm and that there was a large element of hysteria in her blindness. The patient was sent to an oto-laryngologist and internist for examination and treatment. The patient's next visit to me was three weeks later when I found the vision to be 20/40 in each eye, corrected to 20/20. The fundi and fields of vision were normal. The P. P. of the right eye was 150 mm., left eye 150 mm. N. P. C. 120 mm. It was evident from this that Miss D. had made a satisfactory recovery after treatment. Three weeks later, on October 24, 1935, Miss D. reported to me again complaining of recurrences of the attacks of blurring. Examination was exactly as previously reported. She was sent back to the oto-laryngologist for further observation and treatment. I again saw the patient on January 18, 1936, at which time she reported that she had had no recurrence for several months. The hysterical element in this case has as a basis the fact that the patient lived for several years with an aunt who was blind."

Doubt is cast on the probability of hysteria by the repeated direct and favorable response to nasal therapy — medical and surgical — and the apparent complete absence of other stigmata. Letters from Dr. Roy Seeley Moore, rhinologist, whom this patient consulted in Syracuse and from Dr. Paul S. Seagar, associate of Dr. Duncan MacPherson, New York City, who saw her in Dr. MacPherson's absence, confirm what was stated in the patient's letter.

Dr. Saegar treated her from November 11, to November 25. Dr. MacPherson wrote, Miss D. "came to see us November 11 suffering from poor vision which was treated here by ethmoidal packs and suction when the vision became normal." According to a daily record of treatments which accompanied this letter, "eyes much better" was noted on November 16, after four treatments and November 20 the notation reads "able to read fine print." A copy of the report of the "Roentgen examination" by F. M. Law accompanied these letters. The x-ray diagnosis was "This is a chronic ethmoiditis involving both sides most marked in the posterior cells on the right and extending slightly into the sphenoids."

A reflex action affecting the ciliary muscle may come through the superior colliculus from various parts of the organism. Thus there might be a variety of reflex causes for ciliary muscular spasm. The clinical fact which confronts us in that direct local anesthesia of the sphenopalatine ganglion was followed by a striking relaxation of true ciliary spasm. Six years later the recurrence of that spasm was "cured" by submucous resection of the deflected septum and drainage of the sphenoidal sinus by Dr. Arthur Proetz. Again a six year period of comfort was followed by the return of the ciliary spasm in a similar degree. Again it was stopped by nasal treatment under the direction of Dr. Moore of Syracuse and Dr. Saegar of New York City. The diagnosis of ethmoiditis and sphenoiditis was twice confirmed roentgenologically.

The sphenopalatine ganglion as a part of the autonomic nervous system receives preganglionic fibers from the seventh cranial nerve through the nerve of the pterygoid canal, formerly called the vidian nerve. These parasympathetic fibers, according to the researches of Kuntz, Director of the Department of Microanatomy of St. Louis University School of Medicine, make a synapse in the ganglion after which the efferent fibers of the ganglion are distributed to the mucous membrane of the nose, palate, and pharynx where they regulate the serous and mucoid secretions. Through the zygomatic nerve, a branch is sent also to the lacrimal gland. Passing through Meckel's ganglion, but not in a real sense pertaining to it nor to its function are sympathetic fibers derived from the internal carotid plexus and sensory fibers from the 5th nerve which are distributed in the same region with the efferent fibers that arise in the ganglion.

The explanation for the relief obtained in ciliary spasm is not found in the actual function of the sphenopalatine ganglion, but apparently depends on the accessory sensory fibers which pass through it without being a part of its true ganglionic structure. These sensory fibers may be effectively blocked by the direct application of cocaine or the injection of novocain into the region of the ganglion. The same effect might

presumably be achieved by anesthesia of the entire region in which these sensory fibers are distributed. Stopping such an irritation that might have been caused by a deflected septum through surgical correction of the deformity would make repeated anesthesia of the ganglion unnecessary. The same applies to the effective treatment of ethmoiditis and sphenoiditis.

Meckel's ganglion then is in reality an innocent bystander, but being at the cross roads where both sympathetic fibers and sensory fibers are concentrated, it has been looked upon as the arch offender by Sluder, Ewing and others. Our lesson in this connection would appear to be that ophthalmologists can no longer successfully remain isolationists. The cause of glaucoma is to be sought out by considering anything that may modify capillary osmosis within the eyeball.

Does all glaucoma originate in the nose? No. Can nasal disorders have an influence in the onset or course of the intraocular hypertension? Emphatically, yes. To this end rhinologists and ophthalmologists have a long road ahead for cooperative endeavor and research.

PARTICIPATION OF LOCAL COUNTY SOCIETY MEMBERS IN ALL PROGRAMS OF THE COUNTY

ROSWELL T. PETTIT, M.D.
Secretary, LaSalle County Medical Society
OTTAWA, ILL.

I have no formal paper to present. I have been Secretary of the La Salle County Medical Society for eighteen years and at the time I was made Secretary we had two meetings a year — in the spring and in the fall. Then the lay education committee came into being, and then the Scientific Service Committee. Through this latter committee we have secured speakers, the committee has also sent out our notices of meetings to the members of our society and the members of adjoining societies and now we have six or eight meetings a year, all because the work of the secretary has been made easier.

During the first few years that our county society was furnished this service, it was our policy to have a local man present a paper on the program together with a speaker of outstanding merit from Chicago or elsewhere. With the passing of the years it became increasingly difficult to get the men in our local society to prepare a paper. Their replies would be, "I don't want to go up against those big shots from Chicago" or "nobody is interesting in hearing me talk." So it has come to pass that we depend, and I am sure that applies to most of the county societies downstate, on the importation of outside talent. This is an advantage but I feel that our local members have lost a certain something in not preparing papers themselves. This was emphasized a couple of years ago by Dr. Carl E. Black, revered ex-president of this society, who said that the man who prepares a paper gets more out of it than those who listen to it. Yet it is almost impossible to get our local men to do anything in the way of preparing a paper.

A few years ago, however, in order to interest our members in the activities of our society, we hit upon the idea of having them present cases. Any member of the society who had an interesting case could present it at the meeting. Then instead of having the meetings start with dinner we started them at four o'clock. There was a local chairman selected in whatever town the meeting was to be held and it was his duty to interest the various practitioners in that community to present cases. In each of these meetings after it was worked up by the local committee, four to six cases were presented and it made an extremely interesting addition to our programs, and it made it possible for the local members of the society to take an active part in the program without preparing formal papers.

I think perhaps we are all depending too much on the Scientific Service Committee and not participating enough in our county society activities ourselves. This clinic plan is one way in which we can get our members to take an active interest. Almost anybody has some case that is interesting, and this hour of case reports before dinner makes an interesting addition to the program.

Presented before the Secretaries Conference of the Illinois State Medical Society in Peoria, May 21, 1940.

PUNCTUATION

"Father," asked eight-year-old Alice, returning home from school, "are you good at punctuation?"

"Yes," replied the father.

"Well, tell me, please, how would you punctuate 'The wind blew a $5 bill around the corner'."

"Why, daughter, I would simply put a period at the end of the sentence."

"I wouldn't," said Alice mischievously, "I would make a dash after the $5 bill."—*National Monthly.*

POST GRADUATE SERVICES FOR COUNTY MEDICAL SOCIETIES

ROBERT S. BERGHOFF, M.D.
Chairman, Scientific Service Committee
CHICAGO

I want you to know how very thoroughly I appreciate your invitation, the third invitation, to address the Secretaries Conference. As on my previous invitations I will not attempt to read a formal paper at all. I much prefer, if you do not mind, to go along and talk informally about the work you and I and my committee are so deeply interested in, and that is the Scientific Service Committee. I realize that most of you know as much about the history of the Scientific Service Committee as I do, and probably more. I will not bore you with details of its organization et al.

I would, however, for the benefit of the few who might not know these details, point out that the Educational Committee was organized by the House of Delegates in 1924 under the chairmanship of Dr. Hutton. That committee was organized to carry medical education to the lay people largely through the instrumentation of the speakers bureau, radio and newspapers. I think two years later, in 1926, the Scientific Service Committee was organized and authorized by the House of Delegates and its function was and still is one thing: to bring more scientific service to the county societies. The first Scientific Service Committee was under the chairmanship of Dr. Hutton, the second under Dr. F. L. Brown and the third has been under its present chairman. There have been three chairmen but there has been and still is only one secretary, Jean McArthur. I would not ever dare to attempt to get up on the floor and talk about the work of this committee without mentioning her in this connection. The work is very simple because of her and her associates.

It is interesting to note that in 1927, practically the first year of the existence of the committee, 50 county societies were serviced; the committee put on 50 programs. In 1937 it serviced 324 county societies, and in 1939 our Scientific Service Committee serviced over 360 county programs, or practically one a day the year through. That is a lot of work. Not only did we service these programs, but in many instances we publicized those programs before and after the meeting. We sent out notices to the members in many instances and all the other detail work that goes with such a service.

In May 1939 the House of Delegates authorized the chairman of this committee to go to St. Louis and sit in at a meeting of a committee on postgraduate work and report to that body on the work being done in the state of Illinois by the Scientific Service Committee and to bring back to the House of Delegates the impressions that he carried away from that meeting. Those impressions are as follows:

The chairman of your Scientific Service Committee sat in on that meeting and on leaving it the chairman felt that no state in the United States with federal money or without it is doing a bigger job for its state than is the Scientific Service Committee of this state. That can be said without any personal feeling, since there is no credit going to the present chairman because the committee goes right along without a chairman.

In May of last year the House of Delegates did another thing. It authorized the formation of another committee, known as the postgraduate committee. The function of that committee was to study the problems of postgraduate education being done by all the states in this country and then determine whether something might not be added to the work already being done by the Scientific Service Committee. The postgraduate committee met several times and after studying the efforts of the other states it selected two things it thought could be done in Illinois. From New York we took a new book. We have always had, as you know, a list of speakers and subjects which annually is revised and sent to the secretaries and presidents of the county societies. And in this connection, from New York we took a new idea about the book. We revamped the book; we listed the subjects and the speakers after the subjects, so that now you have 400 names of speakers and their 400 subjects so that it is very simple today for your secretary to arrange not for one program but half a dozen in advance by selecting from this book your subject and the very speaker you would like to have come and put it on for you. From Texas we took another idea. They have been putting on three day conferences in the larger cities in the state. The postgraduate com-

Presented before the Secretaries' Conference of the Illinois State Medical Society in Peoria on May 21, 1940.

mittee rather felt it more practical to try one day conferences because we believed it difficult for doctors to give up three days of their time, so we decided on a one day conference course. The first of the four that we gave was held in Jacksonville with Dr. Norbury as chairman. Many of you were there but for those of you who were not I should like to talk about it briefly.

There were 90 present for dinner; 125 came and stayed all day. There were eight speakers selected by the councillors of the district, each man to speak a half hour. If that was not a successful day I have never seen one. The second meeting was held in Champaign, and that was a little different because they wanted the meeting to begin at noon. They asked for and were furnished 11 men to speak 20 minutes each. They had 208 at that full day conference. The third was held at DuQuoin and that was also a highly successful day. They wanted a meeting that would begin at noon and go through a dinner meeting and just to make it different they gave you everything for nothing, including the dinner. They had an attendance of 159 with people coming 140 to 150 miles. And finally the fourth was held in Dixon last month. They had afternoon and evening session and there were 220 persons there that day.

I am simply here as the Chairman of the Scientific Service Committee to say that those four days were all highly successful. I very confidently hope that the House of Delegates will see fit to give us more one day conferences so that we can arrange for more men to attend.

There are a few things I would like to ask you to do for the committee. In the first place I think you should send us more speakers from your part of the country for our list. You have men in your communities who are better able to talk on certain subjects than we have in the larger cities. You understand your own problems better than we do. We would like to have you, if you enjoyed those conferences, to ask for many of them because if they are authorized we should be able to arrange for ten of them. I, as chairman, would appreciate it if you have any original ideas or any innovations, to let us have them. It occurred to me today that maybe what California has done we would be able to do in a modified form. They put on a three day conference course, all three days limited to chronic diseases. I do not know but what it might be a good idea to limit these conference courses to some special thing such as chronic diseases. One more thought occurs to me. I do not know that it would be practical but maybe if we could arrange for ten conference days — maybe every word of those ten talks on those conference days could be published in a volume of one kind or another to be sold at cost, and then sent to every member of the county society in which those days were held.

At any rate there is the story of our committee and its activities for this year. I want you to know that we are deeply appreciative of your cooperation and I know Dr. Camp will give you some new ideas of what should be done next year.

CRITERIA FOR DISCONTINUING TREATMENT FOR SYPHILIS

S. William Becker, M.D.
CHICAGO

In contrast to the enormous literature relating to the diagnosis and treatment of syphilis, comparatively little has been written which deals specifically with the criteria for discontinuance of certain phases of syphilotherapy or termination of all treatment for syphilis in given cases. In recent years more emphasis has been placed on the minimum amount of treatment necessary to prevent relapse in early syphilis. It is obvious, however, that mere prevention of relapse is unsufficient to insure the future of the syphilitic patient, even though it does eliminate him as a public health menace. Stress has also been placed on observation of patients with syphilis over a period varying from a few years to life.

The actual minimum amount of treatment which is administered by syphilologists throughout the world does not vary greatly, and the ideas of leading specialists in the United States have been fused in the publications of the Cooperative Clinic Group[1]. On the contrary, there is undoubtedly considerable variation, even though of a minor degree, in the methods of terminating the various types of therapy for syphilis in university clinics throughout the country. One reason for the paucity of pub-

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This work was aided by funds from the Kuppenheimer Foundation.

Read before Section on Public Health & Hygiene, Illinois State Medical Society, May 21, 1940, Peoria.

lished specific directions for discontinuance of treatment may be the fact that the subject does not lend itself well to written presentation, but rather the procedure depends upon the mature judgement of the expert syphilologist.

A discussion of the problem just presented must be divided into two parts: first, a consideration of uncomplicated therapy and second, therapy complicated by intercurrent disease, by reactions to the treatment itself, or by technical difficulties. Uncomplicated therapy will be given first consideration.

When discontinuance of treatment is considered, two aspects become apparent. Practically every system of therapy combines nonspecific and specific measures or represents a combination of two or more drugs used for their specific effect. Among the nonspecific measures, fever treatment and tryparsamide are most prominent. Drugs utilized for specific treatment comprise the arsphenamines, bismuth or mercury, and iodides. While several measures may be combined during the early months of therapy, it is not advisable to employ all of them for the entire duration of treatment. They are usually discontinued in a rather uniform sequence. Nonspecific measures are ordinarily eliminated before specific measures. Among the latter, the arsenicals are discontinued before the other drugs. The first aspect of our problem, therefore, involves decision relative to the point at which the certain types of therapy may safely or advantageously be discontinued. The second aspect deals with termination of all treatment in a given case.

Treatment of Early Syphilis. More specific statements are made relative to the termination of treatment for early syphilis than for that administered during other stages of the disease. This action is in conformity with the practice of routinizing the treatment for early syphilis, in contrast to the individualization of the treatment for late syphilis, where measures based on the mature judgement of the syphilologist are necessary to insure the best results.

For seronegative primary syphilis, Schamberg and Wright[2] recommend concurrent use of neoarsphenamine and bismuth during the first year of treatment, and state that "Treatment during the second year may consist of alternate courses of bismuth and mercury." In the event that the patient has seropositive primary or secondary syphilis, treatment covers two years before the patient is placed on observation.

The system recommended by the Cooperative Clinic Group[1] for the treatment of early syphilis comprises five courses of arsphenamine alternating with bismuth or combined with mercury and iodides. The entire course of treatment without a rest period covers 69 weeks, after which the patient is placed on observation. Moore[3] suggests altering the above course to combine bismuth with the first three injections of arsphenamine.

Stokes[4] recommends treatment similar to that of the Cooperative Clinic Group without full rest periods for at least one year after all symptoms and signs of the disease have disappeared, and adds: "Prolongation of heavy metal treatment as well as its early use seems to prevent relapse and progression in vital structures. End with at least two courses." He also reported preliminary studies on a system of therapy in which neoarsphenamine and bismuth are employed concurrently, with a rest period of one or two months after 40 weeks. The treatment is then terminated by means of two or three courses of bismuth of 15 injections each, with six weeks rest between courses.

Author's Schedule for Treatment of Early Syphilis. During the past twelve years, a system has been employed at the University of Chicago Clinics[5] whereby continuous treatment covers a period of about one year, in which bismuth is used throughout and arsenicals and bismuth are given concurrently, with periodic intervals between arsenical courses. Treatment is continued by means of several ten weeks' courses of bismuth with increasing rest periods, according to Table I, for about three more years. Four courses of original arsphenamine were given over about 300 days without a full rest period, but five courses are recommended during the first year in case neoarsphenamine or mapharsen are used.

Returning to the first problem, namely a decision as to the time at which arsenical therapy may safely be discontinued, it is seen from the systems already mentioned that administration of an arsenical is recommended for from a total of forty weeks to a period of one year after all symptoms and signs have disappeared. Since in most instances the latter will have taken place at the end of the first arsenical course or at the

beginning of the second course, such a stipulation would not often prolong treatment to a period longer than the 69 weeks recommended by the Cooperative Clinic Group[1]. Since treatment for early syphilis may ordinarily be intense, there is no objection to continuing combined arsenical and bismuth for the maximum time recommended by Stokes, namely up to one year after all signs and symptoms of the disease have disappeared. I believe, however, that the length of this period can be decreased by employment of arsenicals and bismuth concurrently and shortening of rest intervals between arsenical courses. Concentration of the arsenical phase of therapy is desirable if consistent with efficacy, since a larger percentage of patients may be induced to carry out such treatment to completion.

In regard to our second problem, complete termination of therapy in early syphilis, recommendations for continuance of injections of bismuth vary from none in the case of the Cooperative Clinic Group[1] to a period of three years in the author's schedule.

Treatment of Late Syphilis. A consideration of late acquired syphilis is often complicated by the presence of signs and symptoms of the disease, both clinical and serologic. The treatment of so-called latent syphilis is less complicated than that of late symptomatic syphilis, and hence lends itself more readily to routinization. For this reason, more specific statements may be found relative to discontinuance of therapy in latent syphilis than in the symptomatic varieties where personal experience and judgement are more necessary for decision relative to such action. Statements pertaining to the actual duration of treatment are often rather vague. For instance, Schamberg and Wright[2] stated: "Every patient with syphilis must secure an irreducible minimum of treatment which is based upon the sum total of medical experience," and in regard to cardiovascular syphilis: "Carry out specific treatment for an extended period of time, even though all clinical manifestations disappear." Discussion of other types of internal late syphilis are also indefinite as regards cessation of therapy. On the other hand Stokes[4] states: "Don't treat even the most eligible and willing latent patient beyond the standard for early syphilis." This statement may be interpreted as meaning not over four courses of arsphenamine and discontinuance of all treatment one year after the blood test has become negative.

Moore and Padget are somewhat more specific in their recommendation for treatment of latent syphilis. In an article entitled "The Problem of Seroresistant Syphilis"[6], they advised continuous treatment for two years with full doses of the drugs employed, to be followed by lifetime observation. On the other hand, if examination reveals signs of visceral involvement, treatment is carried out according to the type of involvement.

Author's Schedule for Late Syphilis. At the University of Chicago Clinics[5] therapy for late syphilis is carried out according to a basic schedule presented in Table 2 in which preparatory treatment is given with bismuth, usually accompanied by iodides, for a period of ten weeks. Three courses of arsenicals are administered at intervals of four months at the termination of which arsenicals are discontinued. The sole exception to this discontinuance is in the case of neurosyphilis, in which tryparsamide is sometimes administered over several months or years. Arsenicals are not necessary after the age of 60. Bismuth is then given in courses of ten injections at increasingly longer intervals up to that of one year. If the blood test is negative, the patient is placed on observation, but if positive, a course of bismuth is given yearly until it becomes negative or the patient reaches the age of about 70. If the patient is not asymptomatic, but has internal involvement, treatment is varied according to the presenting complication. Preparatory treatment in form of bismuth and iodides differs in the various forms of late syphilis, such as cardiovascular, hepatic or neurosyphilis, but the duration of arsenical therapy, in case it is indicated, is for the same period, namely about one year. The tapering off process by means of bismuth is essentially the same in all varieties with the exception of neurosyphilis where courses of bismuth are repeated at intervals of two months, and yearly courses of bismuth are administered in case the blood test is still positive.

When may be the treatment of prenatal syphilis be discontinued? Kemp[7] prefers to treat prenatally syphilitic children under four years of age as he would patients with early syphilis and those over four years of age according to the schedule for late syphilis. Discontinuance of the

arsenicals and bismuth can therefore be carried out according to the indications as presented in the foregoing discussions of early and late syphilis. In early prenatal syphilis Schamberg and Wright[2] recommend alternate arsenical and bismuth courses for two years, and for late prenatal syphilis continuous treatment for the first year, almost as rigid the second year, and after that two courses of treatment a year consisting of bismuth intragluteally. They do not state specifically when treatment may be discontinued. Stokes[4] emphasizes the advisability of intensive treatment for early prenatal syphilis, but does not furnish definite criteria for its discontinuance. Moore[3] recommends alternating courses of sulfarsphenamine and bismuth with no rest periods for a total of 79 weeks, and adds: "This is absolute minimum of treatment, which should be continued longer, if necessary, to fulfill serologic standard." He recommends that late prenatal syphilis be treated according to the same principles as those for late acquired syphilis, as have been already discussed.

Smith[8] recommends a minimum of one year of continuous treatment for early prenatal syphilis, an additional year for children with Wassermann fastness, and still further therapy for those who show persistent active lesions, especially interstitial keratitis and involvement of the central nervous system.

Author's Schedule for Prenatal Syphilis. My policy is to treat children with early prenatal syphilis by means of arsenical and bismuth therapy for two years, to be followed by courses of bismuth at increasingly longer intervals, with eventually one course yearly. Late prenatal syphilis is treated by means of bismarsen or an arsphenamine and bismuth according to the schedule for late syphilis. The tapering off process with bismuth is the same as the above. Treatment for prenatal syphilis may be discontinued with safety at the age of 35.

Non-specific Measures. Nonspecific measures, which are used most often in the treatment of neurosyphilis, are usually discontinued after they have fulfilled their function. Fever treatment is seldom continued as long as other methods of therapy. It is usually administered in courses some months apart, and, after the patient has shown clinical and/or serologic improvement, treatment is continued solely by specific measures, or the nonspecific function is taken over by tryparsamide. This, in turn, is discontinued eventually, and treatment is terminated by courses of bismuth, as aforementioned.

Treatment during Pregnancy for the protection of the child. A pregnant syphilitic woman is always treated during pregnancy, regardless of the results of serologic tests. If she has been treated for her own disease and is clinically and serologically negative, treatment may be discontinued at termination of pregnancy. Otherwise, she is treated according to the schedule for early or late syphilis, depending on the stage of her infection.

INTERCURRENT DISEASE, COMPLICATIONS AND TECHNICAL DIFFICULTIES

The considerations which have been thus far presented have dealt with uncomplicated therapy. Additional alterations in treatment schedules involving discontinuation of certain phases of therapy must be given serious consideration in the presence of three types of complications. In the first place, it may be necessary to interrupt treatment temporarily or permanently on account of serious concurrent disease such as acute systemic infection, fulminating tuberculosis, nephritis or hepatitis. Temporary discontinuance of therapy in late syphilis is not a serious matter, but interruption of treatment for early syphilis should be permitted only when absolutely necessary.

Secondly, various drugs must be discontinued at times on account of intolerance. For instance, some patients cannot tolerate any form of arsenical. In such instances, treatment is carried out by means of bismuth, iodides and mercury. Tryparsamide may produce blurring or cloudiness of vision, in which event it must be permanently discontinued. Mercury, which is used very little at the present time, may be strictly contraindicated on account of kidney disease. Bismuth is usually well tolerated, and almost never has to be interrupted permanently on account of intolerance. Likewise, iodides must be discontinued only rarely.

Thirdly, technical difficulty may necessitate change in the method of administration. Lack of veins may require discontinuance of drugs which are administered intravenously, such as sodium iodide and some of the arsenicals. In such cases, iodides may be given by mouth, and bismarsen may be given intragluteally as a sub-

stitute for an intravenous arsenical. If bismarsen produces severe reaction in the buttock, it may be necessary to substitute acetarsone, which is administered orally. Recent studies have shown that bismuth in some forms may be efficacious when given by mouth.

Summary. Little consideration is given in the literature to criteria for discontinuance of certain phases of syphilotherapy and termination of all treatment for syphilis.

The literature is reviewed and treatment schedules are presented according to which the various phases of uncomplicated treatment are discontinued in logical sequence.

It is possible to devise systems of therapy from which the time for discontinuance of therapy may be calculated in a large majority of instances.

Treatment must be altered in the presence of intercurrent disease, complications from treatment, and in the face of technical difficulties.

In symptomatic late syphilis the mature judgment of the expert syphilologist is often necessary to insure proper continuation of treatment.

TABLE 1. TREATMENT FOR ASYMPTOMATIC EARLY SYPHILIS

Days	Neo-arsphenamine	Bismuth Salicylate
1	0.45	
3	0.9	
5	0.9	
10	0.6	1.0 c.c.
15	0.6	1.0
20	0.6	1.0
25	0.6	1.0
30	0.6	1.0
35	0.6	1.0
40	0.6	1.0
45	0.6	1.0
50	0.6	1.0
55	0.6	1.0
60	0.6	1.0
67	...	2.0
74	...	2.0
81	...	2.0
88	...	2.0
95	...	2.0
102	0.45	1.0
107	0.6	1.0
112	0.6	1.0
117	0.6	1.0
122	0.6	1.0
127	0.6	1.0
132	0.6	1.0
137	0.6	1.0
144	...	2.0
151	...	2.0
158	...	2.0
165	...	2.0
172	...	2.0
179	0.45	1.0
184	0.6	1.0
189	0.6	1.0
194	0.6	1.0
199	0.6	1.0
204	0.6	1.0
209	0.6	1.0
214	0.6	1.0
221	...	2.0
228	...	2.0
235	...	2.0
242	...	2.0
249	...	2.0
256	0.45	1.0
261	0.6	1.0
266	0.6	1.0
271	0.6	1.0
276	0.6	1.0
281	0.6	1.0
286	0.6	1.0
291	0.6	1.0
298	...	2.0 c.c.
305	...	2.0
312	...	2.0
319	...	2.0
326	...	2.0
333	0.45	1.0
338	0.6	1.0
343	0.6	1.0
348	0.6	1.0
353	0.6	1.0
358	0.6	1.0
363	0.6	1.0
368	0.6	1.0

One month rest.

10 bismuth salicylate at weekly intervals.

3 months rest.

10 bismuth salicylate.

6 months rest.

10 bismuth salicylate.

1 year rest.

10 bismuth salicylate.

Life-time observation.

This schedule is for a healthy adult male, and the dosage of neoarsphenamine should be slightly smaller for women. The bismuth dosage may remain the same.

Mapharsen may be substituted for neoarsphenamine in a dose of 0.030G. to 0.60G.

TABLE 2. TREATMENT FOR UNCOMPLICATED LATE SYPHILIS

Days	Neo-arsphenamine	Bismuth Salicylate
1 to 70		10 weekly injections, 1.0 to 2.0 c.c.
71	0.45	1.0
76	0.6	1.0
81	0.6	1.0
86	0.6	1.0
91	0.6	1.0
96	0.6	1.0
101	0.6	1.0
106	0.6	1.0
	1 month rest	
136 to 196		8 weekly injections, 1.0 to 2.0 c.c.
	1 month rest	
226	0.45	1.0
231	0.6	1.0
236	0.6	1.0
241	0.6	1.0
246	0.6	1.0
251	0.6	1.0
256	0.6	1.0
261	0.6	1.0
	1 month rest	
292 to 352		8 weekly injections, 1.0 to 2.0 c.c.
	1 month rest	
382	0.45	1.0
387	0.6	1.0
392	0.6	1.0
397	0.6	1.0
402	0.6	1.0
407	0.6	1.0
412	0.6	1.0
417	0.6	1.0
	3 months' rest	
		10 weekly injections, 1.0 to 2.0 c.c.
	6 months' rest	
		10 weekly injections.
	1 year's rest	
		10 weekly injections.

If blood test negative, place on observation. If positive, give one course of bismuth each year.

Iodides may be given throughout.

This schedule is for a healthy adult male, and the dosage of neoarsphenamine should be slightly smaller for women. The bismuth dosage may remain the same.

Mapharsen may be substituted for neoarsphenamine in a dose of 0.030G to 0.060G.

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DISCUSSION

Dr. Herman Solaway, Chicago: The determination of the probable "cure" of a luetic patient presents a very difficult and at times a perplexing problem. Before one is able to pronounce a patient treated for syphilis as "cured," he must take in consideration several important and pertinent facts: the stage or classification of the disease; how early the condition was diagnosed; how soon treatment was instituted; the type, response and duration of the treatment; and the results of clinical, physical and laboratory examinations. The more one considers the question of "cure" in syphilis, the more he realizes that it is impossible to speak of definiteness and assurance. The only definite evidence of "cure" of spyhilis in man is reinfection. Stokes considers and presents at least 17 indisputable criteria requirements which must be fulfilled before a reinfection as a criterion of "cure" can be established. An analysis of the cases of reinfection of syphilis considered by the Cooperative Clinical Group and the reinfections collected from the literature tend to show that from 80 to 93 per cent. were relapses.

Tissue transplantation which has been the best criterion in the experimental animal, has not been shown to be applicable to man. Necropsy evidence is of no practical value in deciding the question of "cure" in a living patient.

The criteria for the "cure" of spyhilis, has been considered by many under three interpretations; the eradication from the body of the last remaining treponeme, the biologic "cure," the disappearance of all signs and symptoms of the disease and ultimate noninfectiousness of the patient, (symptomatic "cure"), and the return to negative findings and remains so the serologic tests of blood and spinal fluid (serologic "cure").

It appears that the real satisfactory standard of "cure" is prolonged clinical observation. It must emphatically be impressed before any phase of cure can be considered that it is of great importance to make a diagnosis of syphilis on positive findings as early as possible, to start antiluetic treatment just as soon as a diagnosis is made, to administer at least 18 months of continuous antiluetic medication, to recommend a complete clinical, physical and laboratory examination including a spinal puncture, x-ray of cardiac region, and a complete eye examination.

An annual complete examination should be made on these patients for it is to be remembered that relapse may be late. A long life without complications may continue to be the proof of "cure" of syphilis.

As members of the Section of Public Health we are also vitally concerned with another phase of the control of this disease and that is Public Health Syphilis. Although we are in accord with the above mentioned criteria for the cure of syphilis from a medical viewpoint, yet in Public Health Syphilis we are confronted with the control of syphilis rather than the cure.

We must apply to every case of early syphilis the well known Public Health Principles toward the detection and prevention of a communicable disease, one subject to the concepts of spread and contact. Our aims will then be directed to render these cases noninfectious and thereby stopping its spread. It is an accepted fact that degree of infectiousness of a case of syphilis of five years duration is very low. Moore and Kemp have shown that with the minimum amount of continuous antiluetic treatment in early syphilis consisting of 20 intravenous injections of an arsenical and 20 intramuscular injections of a heavy metal (bismuth) that probable "cure" was obtained in 78.8% of cases. The incidence of clinical relapses as reported by the Cooperative Clinical Group in the same type of cases receiving the same amount of minimum treatment occurred in 8.51% of the cases studied.

It would appear that in the management of public health syphilis our aims would be chiefly directed to the control of the infection until it is rendered noninfectious rather than to seek a "cure" as in medical syphilis. However the same ultimate result should be sought for wherever possible in every case of early syphilis.

The criteria for the "cure" of early syphilis from a public health viewpoint should be considered as the criteria of a "controlled" or arrested case. This can be successfully carried out by the early recognition and adequate treatment of every case of early syphilis with at least one year of continuous antiluetic medication to a point of non-infectiousness; and by the prevention of the spread of infection which demands an epidemiological investigation of the source and contacts and immediate institution of treatment to all positive cases.

"How cold your nose is!"

These words came from the daughter of the house, who was sitting in the parlor with her beau.

"Is Towser in the parlor again," demanded her mother from the next room.

There was a long pause.

"No, mother; Towser isn't in the parlor."

And the silence resumed its reign.

THE ORGANIZATION AND FUNCTION OF THE DISTRICT HEALTH UNITS OF THE STATE DEPARTMENT OF PUBLIC HEALTH

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The people today not only expect but demand protection from preventable diseases, particularly diseases which can be prevented through sanitation. In Illinois the responsibility for protecting the public health is reposed by law and by the pressure of popular opinion in the State Department of Public Health. The sensitiveness of the people about these matters was demonstrated in connection with the outbreak of typhoid fever at Manteno last year and by the aftermath of that unfortunate event.

The popular tendency has gone even farther. The public attitude leans more and more toward holding health authorities responsible for epidemics of such diseases as smallpox and diphtheria, the prevention of which depends in no small degree on individual action. The people expect health officers and health departments to initiate and carry through programs which will prevent such outbreaks. This growing attitude is illustrated in numerous ways.

Only recently, for example, the death of a high school boy from pneumonia led to the criticism of a health department for alleged delay in handling a laboratory specimen taken from the boy. The family of the boy quite naturally cherished the belief that his life might have been saved if the results of the laboratory test had been available to the doctor earlier.

On more than one occasion in years gone by, the State Department of Public Health has been accused erroneously of delay in sending out antirabic treatment where deaths from rabies were concerned. Although unfounded, these accusations reveal a widespread popular tendency to hold health authorities responsible for the failure of preventive medicine from whatever cause.

This same tendency is reflected also by legislative action. The law passed in 1937 which requires premarital examinations for the detection of venereal diseases where they exist was introduced by a member of the General Assembly apparently on his own initiative. The bill was certainly not initiated by the State Department of Public Health nor by the organized medical profession. The same may be said about the law passed in 1939, which requires physicians to take blood specimens from pregnant women for tests for syphilis.

The law creating a division of cancer control, passed in 1939, was not suggested by the State Department of Public Health nor by the organized medical profession. On the other hand, the General Assembly, has been more and more liberal in its response to requests from the State Department of Public Health for appropriations. The attitude of the legislators has been especially liberal in providing funds for the purchase and manufacture of biologics for free distribution.

These illustrations show clearly the trend of public opinion concerning health protection and concerning the responsibility of health authorities. Often indifferent and sometimes actively opposed to programs initiated locally by health officers, the people nevertheless are prone to blame the health office for unhappy experiences which they believe preventive medicine should avoid.

This situation explains why a plan of district health administration was adopted in Illinois. The district system was the only practicable avenue through which the public health services of the State Department of Public Health could be expanded efficiently and localized so as to meet public demands as far as resources permit. The establishment of district units simply made it possible for the Department to do a better job on a larger scale.

The district idea of public health administration from the standpoint of the State is not new in Illinois. From the very outset, beginning about 1900, when physicians were engaged on a per diem basis to investigate epidemic outbreaks, these representatives have been assigned to well defined districts. Later, in 1915, when full time medical officers for field service were first employed, each was assigned to a district. This practice has continued up to the present time. During the period prior to 1936, however, the practice varied as to full time and part time duty of the district health officers. Whether or not these officers were on a full time basis depended on appropriations available and on administrative policy.

*Given before the Section on Public Health and Hygiene at the Annual Meeting of the Illinois State Medical Society, Peoria, May 22, 1940.

It is important also to observe that prior to 1936 the district medical officers worked alone except on special occasions where circumstances required the assistance of other personnel, such as nurses or sanitary engineers, or bacteriologist, from the central office. The district medical officers had no personnel assigned to work with them on a permanent basis and they had no established local headquarters other than their own homes or offices.

Although the district medical officers worked alone, a staff of about 15 public health nurses had been built up in the Department. These nurses were likewise assigned to definite districts but the districts for nurses did not coincide with the districts for medical officers. In some cases different parts of the district of the medical officer would fall within the districts of two or three of the nurses. The executive supervision over the medical officers centered in one division and that of the nurses in another. In the field the medical officer had no administrative authority over the nurses. This situation prevented good team-work on the part of the field personnel of the Department and led to the waste of effort.

The important change which took place in 1936 was the adoption of a plan that unified the field strength of the Department into full time district units with established headquarters and with a staff to work under the direction of the medical officer in charge, the district health superintendent. All of the district units were placed under the executive supervision of a single medical officer attached to the central office at Springfield. This plan simply brought together in a better administrative system the personnel and resources of the Department available for field service.

Simultaneously with the adoption of the unified district plan the field personnel was strengthened considerably. This was made possible by funds allotted to Illinois by Federal Government under the provisions of the Social Security Act. That Act was passed in August 1935 and funds were made available to Illinois under its provisions for the six months ending June 30, 1936, and for each fiscal year thereafter. The Social Security Act authorizes a continuation of appropriations indefinitely by the Federal Government for allottment to States for public health purposes. For practical purposes the Federal-State cooperation upon which the district health unit plan in Illinois functions may be regarded as a permanent system of public health administration.

On July 1, 1936, six full time district units were established in Illinois. The plan which was finally adopted as permanent calls for a total of 20 such units. At the present time, nineteen have been organized. The other one will probably be organized within the next six months.

The staff of each unit consists of a medical officer, who is in charge, a public health nurse, a sanitary engineer, and a clerk. The medical officer, the nurse and the engineer has each had special training in public health practice. Most of the physicians and nurses have spent a year each in study at special schools of public health connected with universities which offer approved courses in this field. The staff personnel of the units is therefore well trained and competent in public health matters.

The territory of each district consists of from 3 to 7 counties and the populations range from approximately 100,000 to 800,000. A little reflection on the strength of the district staff in relation to the population served will suggest the magnitude and character of programs which it will be possible for the district units to undertake.

A reasonably adequate local health department for a community of 100,000 people requires the services of a staff of 70 trained persons, employed on a full time basis. This staff of 70 includes 7 medical officers and assistants; 40 nurses; a dentist, a sanitary engineer, an education specialist, a laboratory director, a statistician, a social worker and a dental hygienist; 7 milk, food and sanitary inspectors; 2 laboratory assistants and 6 clerks. If a staff of that size is needed to provide a good public health program along established lines to a community of 100,000, it is quite clear that the district health units of the State Department of Public Health, with a present maximum staff of 4, including the office clerk, can do little more than arouse local interest and suggest, advise and guide local efforts along public health lines. With the present available strength, the district health units can never undertake anything that approaches a comprehensive, well-rounded and adequate program of local health service in keeping with modern standards.

The work undertaken by the district health

units is very largely along five general lines. These are: 1. communicable disease control; 2. maternity and infant hygiene; 3. health promotion in the schools; 4. the improvement of sanitation and 5. education for health. All of this work must of necessity be general in character because of the very limited personnel in the districts. Detailed local work, such as routine quarantine, routine inspection of school children, routine programs of vaccination and immunization and routine infant and maternal hygiene service must of necessity be done by local workers if it is done at all. The district personnel stimulates and encourages such activities and they render every practicable assistance but responsibility for local work is largely in local hands.

In keeping with the established policy of the Department the district personnel is instructed to work in close cooperation and harmony with the medical profession and with local health officials. This is at all times fundamental. The district superintendents do not practice medicine. Even such procedures as the Schick test and the tuberculin test are done by the district health superintendents only at the request of the local medical society if there is one or the local practicing physicians where there are no organized societies. The district superintendents are instructed in reference to tuberculosis case finding, for example to make tuberculin tests among high school students, and follow up with x-rays of positive reactions, *when requested to do so by the local medical society and with their cooperation.* This principle holds with other activities involving the practice of medicine.

Within these limitations the district units aim first of all at the control of communicable diseases. To this end every reported case of typhoid fever, diphtheria, smallpox and several of the rarer diseases is investigated to determine the source of infection if possible and to take such steps as may be practicable to prevent spreading. Investigations are made also of epidemic outbreaks of all kinds. Cases of venereal diseases are investigated when circumstances require and efforts are made to discover sources of infection and to cause delinquent patients to place themselves under treatment by practicing physicians. To prevent outbreaks the district personnel stimulated local programs of vaccination and immunization against all diseases controllable in this way. The district medical officer, moreover, is instructed to assist local physicians and local health officials on request whenever at all practicable in connection with the control of communicable disease of any kind.

The promotion of maternity and infant hygiene is a definite item in the programs of the district units. Instructions to the district medical officers as to activity along this line read as follows:

1. This will consist of close cooperation with the medical society program (if there is one) in organization of maternal hygiene classes and demonstration and antepartum groups, in order that a closer supervision may be brought about by having the prospective mother report to the family physician for a Kahn test, blood pressure reading and urinanalysis, and by teaching the prospective mother how to prepare for the delivery. This should be followed, when possible, by neo-natal and post-partum calls, in order that the infant may receive proper nutrition, and the mother be advised regarding hygiene of the puerperium period.
2. Well baby clinics will be held in each county, together with the promotion of summer round-ups, which will be conducted in cooperation with members of the county medical society.

The work in maternity and infant hygiene is of basic importance in all public health programs and has yielded already to the most impressive results of efforts in the public health field.

The service of the district units in sanitation is on a more satisfactory basis than any other service offered for several reasons. Environmental sanitation is an older service than any other, it is appreciated more generally, it is more nearly an exact science and sanitary improvements affecting an entire community can often be made through the cooperation of only a few officials. The sanitary engineer in each district is instructed to inspect public water supply and sewage disposal systems when so requested by local authorities in connection with problems involving public health hazards. As routine activities the engineers make surveys of the sanitary needs of rural schools, of recreational and tourist camps, and of local fair grounds. They keep informed concerning the proposed sinking of wells and offer their services in respect to location and structural features. They are available for consultation concerning sanitary problems of local importance.

The public health nurse in the district assists the medical officer in his work, gives demonstrations in public health nursing to promote this

service on a local financial basis and assists local public health nurses in every practicable way.

All of the district staff members take advantage of every opportunity so far as possible to do health educational work. Each district is provided with motion picture equipment and with other facilities for giving illustrated lectures.

In summing up it may be said that the district health unit is the local representation of the State Department of Public Health and as such is responsible for extending the services of the Department as far as possible. As time goes on and resources increase, it may be possible to make each unit equivalent to the State Department of Public Health for all ordinary local purposes. This would include, among other things, the routing of morbidity reports from their sources through the district offices. For the present, however, the strength of the unit personnel makes impossible such detailed activity.

DISCUSSION

Dr. W. C. Earle, Champaign: While I am a native son of Illinois and a member of the Illinois Medical Society since graduation from medical school it has only been in the past year that I have had the pleasure of taking an active part in this State in public health work. It has been a pleasure to become acquainted with Doctor Baxter and his staff and to learn first hand of the work he is doing. We have just heard a summary of one phase of this work.

I hope Doctor Baxter won't object to my borrowing from a recent talk he gave us in Champaign. He referred, as I recall, to our progressiveness in many lines but to the fact that when it came to the practical application of medical knowledge Illinois lagged far behind and as a State had only recently taken advantage of knowledge known for years concerning the treatment of syphilis and other diseases. Certainly it is a very definite step forward to have finally full time special trained personnel to direct his district activities — a fact recognized by many other states years ago but only recently adopted in Illinois.

Most states as large as ours, however, have found a district organization centrally directed and without adequate and specially trained local organizations very expensive and not very efficient. New York City has largely decentralized its own department in order to give efficient service to its large population. I am wondering what the ultimate goal should be in Illinois. Will it be more State and Federal funds poured into the District System which we have, or will it be enabling legislation to encourage and permit more desirable local governmental units such as counties to appropriate for and direct local health work. As Doctor Baxter states his staff is directed to work in close cooperation with local health authorities. But in most instances all the authority is given to township supervisors and part time health officers who may not be trained to assume this responsibility properly. Undoubtedly the best is being done that is possible under the present system but with locally financed full time health personnel a State Department of Health with a district system really could give Illinois a Health Service which it has never known before.

Doctor Baxter has emphasized his cooperation with the medical profession. I can testify that this is true in fact as well as words. To render an efficient service, however, utilizing facts that are commonly accepted as good public health practice, one must assume that the medical profession is well informed and able to put into practice all these technics. We all realize that that goal has not been reached. The postgraduate courses and district meetings of the Medical Society to bring the latest innovations to the general practitioner are helping to take care of this situation. From a public health standpoint, however, it is not enough for all physicians to know how to vaccinate or to test properly. Not very much is accomplished if for instance only half the children are immunized to diphtheria or even 75%. It must be almost 90-100% to really reduce the incidence and there are times that the Health Department is the only agency that can go out and get the last 25%. We should cooperate with, educate, and assist in all ways possible the family physician to accomplish these things but I am wondering whether the family physician realizes that there is still a certain amount left to be done which he won't get anyway, but which the Health Department can do.

I am glad to be back in Illinois and to take an active part in public health work here. I believe in the State and in its future with regard to adequate health service.

Dr. Winston Tucker, Evanston: I wish to congratulate the essayist for the presentation of an excellent paper. Many Public Health Administrators are unable to hire the personnel which is necessary to provide a high standard of Public Health service in their communities. Adequately trained and experienced personnel is required in Public Health work, and it is for this reason that Federal funds are now being made available for training Public Health workers.

The speaker recommends a staff of 70 persons for a health department serving a community of 100,000 people. Possibly you will be interested in the personnel of the health agencies operating in the City of Evanston. Private health agencies supported by Charity or the Community Chest play an important part in the health program in Evanston. All of these agencies cooperate very closely with the official agencies, and two of them, the Visiting Nurse Association and the Infant Welfare Society are housed with the City Health Department.

The official tax-supported health agencies in Evanston are the City Health Department and the School Health Service. These two agencies employ 24 persons on a full-time basis and 5 persons on a part-time

basis. The private health agencies employ 21 persons on a full-time basis and 10 persons on a part-time basis. Accordingly, a total of 60 persons is engaged in Public Health work in Evanston, 45 of whom are employed full-time. Thirty of the full-time employees are public health nurses, which in a community of 70,000 people comes very close to the ratio recommended by the National Organization for Public Health Nursing of one full-time public health nurse for each 2,000 in the general population. Of the remaining 30 persons, 13 are physicians, 3 of whom serve full-time, two as school physicians and the third as Health Officer. The remainder of the personnel is divided as follows: — 2 dentists part-time; 2 stenographer-clerks part-time; 4 sanitary inspectors; 3 laboratory technicians and 3 stenographer-clerks.

For keepig of proper records, adequate office personnel is required. Too frequently this is one phase of health department work which is neglected. Well trained, intelligent stenographer-clerks are very valuable in such an organization, and it is my suggestion that Health Administrators make every effort to hire well trained office help as well as professional personnel. With the development of local public health programs in this state, the District Units of the State Departments are being organized in the proper way. This expanding health program has been much needed in Illinois, and if continued, this State will be one of the leaders in Public Health in the nation.

INDUSTRIAL HYGIENE IN A PUBLIC HEALTH PROGRAM

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Any public health program to be successful must be rather closely integrated with the other public health activities of the community and with existing medical facilities. Whether the program be child hygiene, sanitation, tuberculosis, venereal disease or industrial hygiene, all are striving toward the same ultimate result, namely, better community health.

While such a cooperative program is of value in any health activity, it is of the utmost importance in the field of industrial hygiene, as here we must deal with the entire public health of the great majority of the adult population — those who earn their livelihood in our many industrial establishments.

In the minds of many public health workers, the term "industrial hygiene" is often construed as being synonymous with the control of diseases due to occupation. Because of this unwarranted restricted interpretation of this phase of public health there has been a lack of interest in the health problems of our industrial population, and so, the statement that the greatest unmet public health need is in the field of industrial hygiene appears justified.

Industry as we know it, not only deals with machinery, but also with men and women who are part of a community.

Modern industry comprising some 40 millions of workers in this country, who are engaged in innumerable types of work and under varying conditions of their immediate environment, which in one way or another may seriously affect the health and efficiency of these workers, has gradually given rise to many outstanding conditions influencing health, such as, overcrowding, problems in special sanitation, industrial housekeeping, fatigue, nutrition, ventilation, illumination, industrial wastes, increased frequency of ordinary diseases and illness, air pollution, occupational diseases, and others. These complications of modern industry do influence morbidity and mortality rates.

The occupational diseases, although important, do not take an especially prominent place in either the morbidity or mortality experience of industrial workers. An examination of the vital statistics of industry will show that industrial workers suffer from the same diseases as the population in general. From various published statistics during the past few years we know that ten times as much absenteeism in industry results from non-occupational diseases as from the strictly occupational diseases. This being true, we cannot content ourselves with this small fraction of the problem, nor do we have a license to exist if we are to totally neglect 90 per cent. of our load.

The present century has seen the development of the technique of disease prevention and health conservation, and has seen that technique widely applied by local, state and federal health agencies with specialized public health personnel, by a variety of organized voluntary agencies, as well as the private physician. The achievements of this organized and cooperative effort in the prevention of disease is well known to all of you.

The purpose of public health, as we view it, is to afford health protection to all the people, whether it is in the home, school or factory.

Read before Section on Public Health & Hygiene, Illinois State Medical Society, May 22, 1940, Peoria.

Furthermore, the control of man's environment, insofar as such control reduces disease, conserves life or makes living safer, is a public health enterprise.

The general public have become more and more conscious of the health problems affecting workers in industry and have maintained that the guidance and protection of the health of those adults is the responsibility of public health authorities. This should be interpreted that sound public health services must be extended to our industrial population, and must deal adequately with all ages of life.

Dr. Vaughan, Health Commissioner of Detroit, states that "industrial hygiene has long flirted with the local health officer on the periphery of his public health program." With a few noteworthy exceptions, prior to 1936 there had been much talk about industrial hygiene, but little action. Today, there are industrial hygiene divisions in 30 state, 8 city and 2 county health departments.

As we glance back over the road traveled by our health pioneers, we observe that each few years some special public health problem seems to hold the center of the arena. It may be tuberculosis, cancer, heart disease, syphilis or mental hygiene.

This has made us all too prone to concentrate upon some one province of public health work and to create a number of independent agencies or units without any well-knit, coherent and harmonious program, which would unite them all into a broad and comprehensive campaign for the prevention of disease. Such an administrative approach can only be looked upon by an enlightened public health official as impractical and obsolete.

I am sure such a technique does not appeal to the modern public health administrator whose program must go on day after day, month after month, and year after year — so designed, as to give the full benefits to all people of his community without limitation.

Industrial hygiene should not come into public health practice as a new adventure seeking trial, but should be woven into the very fabric of the permanent health safeguards of the community. There should be no barrier to wall off industrial hygiene from sanitation, syphilis, tuberculosis, nursing, medical or other programs of the local health department.

When child hygiene became acknowledged as a distinct phase of public health effort, which brought together under one administrative division the scattered and unrelated attempts to prevent infant mortality, through pre-natal and post-natal care, through supervision of children during the pre-school age, as well as through the grade schools, we had an excellent illustration of a progressive and broadly conceived plan of attack against the causes of illness and death which overtook this age group up to the period of adolescence.

While I do not desire in the slightest to disparage or minimize the value of intensive campaigns in other public health undertakings, yet side by side with these, there should be an equally intense and unrelenting campaign to prevent the causes of ill health, premature bodily decay and death which operate after the healthy boy or girl has grown to manhood or womanhood. Why should the activities of the modern health department fail to reach that child after he leaves school and enters into the industrial and economic world? Our adult population is mobilized in industry. They can be served en masse. Why not then use this entrance as an approach to adult hygiene or industrial hygiene. Industrial hygiene bears very much the same relationship to adult health that school hygiene does to child health.

Many public health officials have failed to appreciate the opportunities which are theirs to advise employers of factory labor concerning improvements which may be made to the advantage of all concerned by the application of our present knowledge of hygiene. This is an opportunity for carrying public health into the factory.

The large industries know of such benefits and are in a position to have expert direction through the employment of competent plant physicians, but the smaller factories are not prepared or equipped to consider such health services of a preventive nature.

In Illinois, 91% of the industrial establishments employ 100 workers or less and are, therefore, not in a position to engage in a health program of preventive medicine, general sanitation and hygiene. This means that the great bulk of our industrial population do not have the benefit of health guidance and supervision. Prevention is dependent on the knowledge that disease occurs.

The health officer has the opportunity, therefore, to stimulate the supervision of health in industry itself. This means that the health officer should be familiar with the industries in his community and the facilities they have or do not have for promoting health.

Furthermore, the health officer already has much in common with employers and factory executives as leaders of the community, and this opportunity can be used to point out the value of health supervision to industry, its workers and the community.

In many fields of public health there are certain environmental factors which may be controlled without the conscious participation of individual citizens; such things as water supply, sewage disposal, etc., need only the general support of the taxpayer to be adequately controlled. In industrial hygiene, which is an all-inclusive adult public health program, there are numerous factors, both inside and outside the plant, as well as social and biologic considerations and others which affect the health of the industrial worker to an important degree, and if these factors were adequately supervised an improvement in the vital statistics of our adult population would unquestionably occur. Therefore, we must recognize that this type of public health activity is not impersonal like the control of some of the other environmental conditions, but involves the personal cooperation of the individuals concerned.

Many local health departments are, at present, too small from the standpoint of personnel to maintain an industrial hygiene unit. This means that these local health departments will probably never have on its staff a physician, engineer or chemist who has specialized in industrial hygiene. Usually such a locality will receive its industrial hygiene services from the state health department's division of industrial hygiene. Yet in spite of this arrangement, the local health agencies must become industrial hygiene conscious and build some form of an industrial hygiene service into its daily public health program.

Now, how to proceed to extend the advantages of industrial hygiene through the medium of local health department personnel. This procedure is the same as that employed for any other health adventures, and that is by education and training of such personnel. The necessary facilities have been established by the state health department and its staff. Here specialists in the field become the teachers to guide, direct and prepare local public health physicians, engineers and sanitarians for the discharge of their new obligations. After they are familiar with the technique of making medical and engineering observations of occupational environments and the worker, the industrial hygiene division of the state health department can supply, when necessary and indicated, in cooperation with the private physician or the plant medical director, additional medical, engineering and laboratory facilities for evaluating and appraising the problem; so that, with this factual data the local health department may continue its contacts with the industry in its jurisdiction.

Let us now consider some of the industrial hygiene services the local health agency can include in its public health program. They can furnish and discuss with plant executives, factory physicians or plant medical directors such items as:

1. Making special studies, tests or examinations which they are not equipped or qualified to perform. These services include the collection of air samples, material analysis, physical determinations of ventilation, illumination and others too numerous to mention.

2. Providing detailed and specific information on toxic manufacturing materials and harmful conditions and exposures.

3. Furnishing industrial health statistics duly interpreted.

4. Correlating work of industrial hygiene programs in plants and setting up uniform procedures.

5. Working with and through plant medical departments to obtain specific plant improvements, better factory housekeeping, sanitation, etc.

6. Stimulate plant medical departments to concentrate on preventive measures.

7. Encourage the plant medical department to interest itself in the worker's life beyond the confines of the factory. This means personal hygiene, recreational facilities, proper diet, habits, etc. This method of health education carries with it many opportunities in a public health program for the worker and the community, as through this avenue we are also able to reach the entire family.

The above concludes in a general way what the local health departments can do to assist their local industrial establishments and so improve its program and facilitate accomplishments.

At this point, let us consider the community health assets that are at the disposal of local health departments and which can be integrated with industrial hygiene.

1. *Communicable Disease Bureau, including Tuberculosis and Venereal Disease.* Here the industrial hygiene unit can act as a case-finding agency in a large percentage of the adult population. This is of especial value in the tuberculosis and venereal disease program as we are dealing with the specific age groups where these diseases are most prevalent. When positive cases are located this information can be turned over to the specific bureaus for the investigation of contacts, home conditions and other epidemiological data. These bureaus can keep the individual under observation and see that proper precautions are taken to keep the individual noninfectious.

2. *Sanitary Bureau*: This bureau can assist materially in providing a safe water supply for human consumption and this indeed is a vital problem as many industrial plants have a dual water system — one a cheap unprotected supply for production purposes and fire protection and one for human use. In such cases it is essential that there are no cross connections providing a means of contamination.

3. *Nursing Bureau*: The field of the public health nurse and the industrial nurse is practically unlimited in industrial hygiene, as it is the nurse who undoubtedly must do most of the follow-up work and nursing supervision in the home. In the latter instance she can be of great value to the official health agency, the family physician, as well as the patient. It is she, too, that has much to do with improving home conditions and sees that orders are enforced.

One of the greatest needs of the moment for undertaking and promoting such a program is also the integration of the services of physicians in private practice. They possess an enormous latent reservoir which can be activated in the name of health education and industrial hygiene. It is urged that physicians in private practice who accept patients from industry be encouraged to work with the local health departments. They should be shown the part they play in giving a fullness and wholesomeness to the daily life of industrial workers, as well as discovering those departures from normal health. The private physician's office can be a lookout station. In this way he participates in a public health program and encourages preventive medicine. The pediatrician of today may be cited as an example of such a commendable practice.

Industrial hygiene in public health programs also calls for the promotion of local committees on industrial health to be created in each county medical society so that they may act in an advisory capacity to the official health agency interested or actively engaged in industrial hygiene. Since much of the problem lies in the control of the ordinary diseases of adult life, the medical society, through its members, can here again be of great assistance in early diagnosis campaigns, and so decrease the incidence and mortality for this particular group.

In dealing with this problem, the U. S. Public Health Service suggests that the essential factors of an industrial hygiene program should include fundamental research, application of research and education. Most agencies are not equipped to carry on research, but can be fitted to carry out those phases of the program dealing with education and application.

It needs, though, an organized public health demonstration to bring out the amount and kind of adult health services that can be successfully offered. This is your approach to industrial hygiene.

DISCUSSION

Dr. Arlington Ailes, LaSalle: I am glad to hear Dr. Kronenberg's paper. It brings to us with considerable emphasis the fact that this matter of industrial hygiene is no longer on the fringe. We have dealt so intently in the past with saving young lives that we have been neglecting adult life. I think it time that we branch out and think more of the adult and see what we can do towards saving his life. I am impressed with some of the statements made. I have always been under the impression that industrial hygiene dealt mostly with the control of fumes and dust, etc., and their bad effect on health, but the doctor mentions communicable diseases in industry also. I am wondering if I am right in understanding now that the division of industrial hygiene will come in and help us find tuberculosis and syphilis in our factories. I know of some factories that have wonderful housekeeping yet they have tuberculosis among their employees. I am wondering if the doctor means what I think he said in the paper, that the division of industrial hygiene will come into the community

and help the local health officer find syphilis and tuberculosis in these factories.

Dr. A. J. Levy, Chicago: How can the district health officer or health officer assist Dr. Kronenberg in finding those infectious diseases? Is Dr. Kronenberg going to find communicable diseases, such as tuberculosis, and then refer it to the health officer, or vice versa?

Dr. J. J. McShane, Springfield, chairman: If Dr. Kronenberg had a list of all the plants in industry in each man's district, that might be of help, so that you can know what is being carried on, and if there is any new plant that comes up it might be of interest, because most of these men are from around Chicago. Let's hear from Dr. Miller.

Dr. M. H. Kronenberg, Chicago (in closing): I am glad Dr. Ailes raised the question he did.

In certain industrial areas, like Ottawa, where they have silica mills and where you may expect a higher incidence of silicosis among workers, if you can keep tuberculosis out of such a community where you have silicotics, your silicotics will live on and perhaps die of something else.

As to the tuberculosis phase of industrial hygiene, it is the plan to encourage certain industries that may present a high tuberculosis rate to induce their management and their medical department to undertake a case finding program of their own. We always like to have the local health administrator in on such projects if we are going to sell it to local management, and we want the private physicians in on it as well.

In a statewide survey that we made covering some 3350 plants, we were able to secure a list of 187 plants in Illinois that were interested in doing something about syphilis, and that list of plants was turned over to the syphilis control officer follow-up work. Not all of them were actively engaged in taking bloods for serologic tests, but some had started the program and others had talked about it and were considering it favorably; and so it is our purpose to encourage that type of communicable disease case finding, because, as I said, we feel we can accomplish the thing *en masse*. At present we are studying an industry in which the exposure to a certain material that the men work with is conducive to neurologic and psychiatric manifestations. The psychiatric factor as a result of exposure to this particular material is well known. I refer to carbon bisulphide. In the two manufacturing plants we have also encouraged a syphilis control program. Why? Because we explain to them that in the case of an alleged occupational disease, should the man break down with certion psychiatric findings, how would they know whether or not it was due to the carbon bisulphide exposure or due to a syphilitic infection that the man had for some years, unless they had a serologic record. We feel that the best record is to take bloods on all the workers.

As to other communicable diseases that Dr. Levy mentioned, I can use the same example. For instance, we have encouraged the vaccination of employes in plants but always, with the cooperation and collaboration of the physician or the part time factory physician or, if they do not have any, to call in one of the local men in town to do this work.

I feel that complete public health work as we look upon it other than the occupational diseases, is an all-inclusive health program for adults, and the best we can strive for is not to set up health projects singly, but instead conduct our activities jointly, then call to the attention of management and labor the need for cooperation in these health projects that are set forth by our Springfield office. We as a division of industrial hygiene have the opportunity to meet with these people on a common ground. We feel we are close to them and, if we enlighten them, we gain their confidence; they will follow our advice.

Dr. Ailes: Is this matter of syphilis and gonorrhea of sufficient public health importance to appeal to industry for their pecuniary gain?

Dr. Kronenberg: Yes, from the standpoint of absenteeism, absolutely. Every time a man is absent, if he is gone for a day or a week or ten days, it means some break in the production line. It means putting on an apprentice or starting to train a man. It has been estimated that it costs industry two hundred dollars every time they have to break in a new man on the job, and for that reason progressive management today looks upon the diseases of ordinary life as being just as important to them as the occupational diseases. There is at present a desire by the Air Hygiene Foundation of America and the National Association of Manufacturers to promote health in industry on the basis of the ordinary diseases, as well as the strictly legal occupational diseases. In 1936 we were hysterical only about occupational diseases; that was the theme of that year. Today we see efforts to have a general public health program for industry. The most encouraging part of this field is to walk into the first-aid room or into the doctor's office in industry and see a whole list of different educational pamphlets on such subjects as tuberculosis, venereal disease, cancer and the like, all available for the worker and his family.

CHRONOLOGICAL

The amateur artist was painting — sunset, red, with blue streaks and green dots.

The old rustic, at a respectful distance, was watching.

"Ah," said the artist, looking up suddenly, "perhaps to you, too, Nature has opened her sky-pictures page by page? Have you seen the lambent flame of dawn leaping across the livid east; the red-stained, sulphurous islets floating in the lake of fire in the west; the ragged clouds at midnight, black as a raven's wing, blotting out the shuddering moon?"

"No," replied the rustic, shortly; "not since I give up drink."—*The Sacred Heart Review.*

BUTESYN PICRATE DERMATITIS WITH CASE REPORT

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CHICAGO

Butesyn picrate is widely used by the laity in the treatment of burns and scalds. Their belief in the efficacy of this remedy is supported by the recommendation of their druggist. True, the druggist warns that occasionally a reaction may occur, but the average man on the street pays little heed to this. In not a few instances butesyn picrate may be used with impunity, produce gratifying relief and aid in healing minor burns. A certain percentage of individuals will, however, when exposed to butesyn picrate through the broken skin, manifest a startling reaction. The clinical picture develops rapidly and the etiology may remain obscure unless the possibility of butesyn picrate sensitivity is borne in mind. *There are no mild cases.*

CASE:

B. H., a 51-year old white female, sustained a first degree burn of the right forearm. The injury was shortly afterwards treated with butesyn picrate. Twelve hours later the burned area became painfully swollen and stiff. There was a simultaneous involvement of the face. The eyes were swollen almost shut and intense *itching* and *burning* were complained of chiefly in the facial area.

Examination revealed an erythematous, edematous, vesicular and weeping eruption. The lesions were papular, more or less circinate, varied in size from a pea to a ten cent piece, and suggested urticaria. The entire face was involved, the lesions extending to the sides of the neck laterally, and upper chest region anteriorly. The eyelids were greatly swollen and the conjunctivae were markedly injected. The facial eruption showed a yellowish tinge, although no picrate had been applied to the face. A yellowish staining of the nail bed of the fingers was noted. Symptoms of local itching and burning were bitterly complained of and a marked mental irritability was noted. Temperature was not elevated, pulse and respiration were normal. R. B. C. 4,300,000. W. B. C. 7,600 with 60% polymorphonuclear leucocytes. The urinanalysis revealed nothing abnormal.

Treatment consisted of wet compresses of aluminum acetate solution. The acute stage subsided in 48 hours, thereafter calamine lotion was applied for three to four days. A branny desquamation occurred about the second day and the symptoms gradually disappeared along with the eruption.

DISCUSSION:

The majority of cases of butesyn picrate sensitivity reported in the literature are characterized by symptoms which are both *local* and *general.*

LOCALLY:

The early lesion consists of irregular macules and papules purplish yellow in color, rapidly becoming vesicular and urticarial. The characteristic lesions vary in size from a pea to a dime and the intervening tissue appears erythematous and edematous. The site of predilection is usually the arms, face, neck, chest and, occasionally, the trunk. The intensity of the eruption is characterized by exacerbations and remissions. The initial lesion appears at the site of application. Typical lesions having a characteristic yellowish coloration will appear in regions in which the picrate has not been applied. These dried yellow crusts are believed to constitute a source of reabsorption. A permanent yellow staining of the nails of both hands and feet is diagnostic.

GENERALIZED:

The local reactions are followed by generalized allergic cutaneous manifestations and central nervous system symptoms. Marked nervous irritability is quite common. Severe cases have been reported in which unequal pupils, scanning speech, and spastic gait developed. Generally the temperature remains normal or is but slightly elevated. Pulse is between 90-100 degrees. Anorexia is common and nausea may occasionally supervene. The blood picture is unaltered, although picric acid may be recovered in the blood serum and spinal fluid of persons susceptible to this chemical.

MODE OF ACTION:

N. Riley Jackson has reported five cases of butesyn picrate sensitivity and believes from a series of experiments conducted by him that 4 per cent. of all persons will manifest symptoms of susceptibility to this chemical. He believes that the dermatitis occurring at a distance from the initial application is produced by a protein picrinate transmitted by the blood stream or lymphatics. The picrinate is split up into its component parts. Here the trinitrophenol radical or some of its modifications reunite with the epithelial cells.

Malmejac conducted a series of experiments on dogs. When a lethal dose is given these ani-

mals die from respiratory paralysis. With sublethal doses it was demonstrated that picric acid appeared in the blood stream as a protein combination. Furthermore, the trinitrophenol radical can be broken off from the protein complement and redeposited as a protein picrinate in a new cell. This process can be repeated again and again.

The redeposition theory consists of the union of trinitrophenol with fixed cells. There is a splitting off and transplantation by the lymph and blood stream to distant places. Here it unites with totally different cells, producing a manifestation resembling the former condition.

TREATMENT:

Consists chiefly in withdrawing and discontinuing the butesyn picrate. A 5 per cent. aluminum acetate solution may be used to advantage as a continuous wet compress or until the acute local reaction subsides. This usually takes three to four days. Either cold cream containing zinc oxide or calamine lotion may be used until the condition has entirely cleared up. Sedatives are often necessary to control the C. N. S. irritability.

CONCLUSIONS:

(1) Since 4 per cent. of individuals are susceptible, the use of this chemical by the laity in treating burns should be discouraged.

(2) Small amounts of butesyn picrate will produce a violent reaction in sensitive people.

(3) In the preoperative preparation of the abdomen, especially in children, the surgeon should skin test for sensitivity 24 hours before operation. Better still, avoid using it entirely.

(4) Absorption takes place by lymphatics and blood stream with the deposition of protein picrinate in distant body cells.

(5) An eruption following treatment of a burn with butesyn picrate should immediately excite suspicion of sensitivity.

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Jackson N. Riley

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"Grandma," said Brewster's young son one day, "which of my parents do I resemble?"

"Both," the grandmother answered. "You have your mother's remarkable capacity for spending money and your father's absolute genius for not making it."—*Kansas City Star.*

THE PSYCHOLOGY OF DEAFNESS IN CHILDREN

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The gropings of a blind man no longer make a comic turn upon the stage. Apparently, they did some three centuries ago when Shakespeare wrote his "Merchant of Venice." The time has gone, too, when visible suffering can raise a laugh. Yet the mental and therefore the invisible struggles of the man who is deaf, or the woman who sits lonely among her chattering family because she cannot catch what they say, or the child who sits forlornly in the corner because his family have relegated him to this position because they think he is a blight on their family tree, are still considered humorous.

Why, you may ask, should anyone besides an otologist, psychologist, or psychiatrist presume to discuss the subject of "The Psychology of Deafness in Children?" The answer is evident. To the pediatrician and family physician is entrusted the care of more than 90 per cent. of all children. And, since deafness, partial or total, affects as many as 3,000,000 children, the pediatrician and family physician who is to care for these children must be usefully informed about them.

Ten years experience with the children in a residential school for the deaf, whose daily attendance has averaged between 500 and 600, and 70 per cent. of whom are under 15 years of age, has led me to summarize some of my observations. To one who is not expertly trained in psychology and psychiatry such observations have been exceedingly interesting. Medical literature, with reference to deafness and the psychological reactions associated, lends very little assistance to such a study.

In order to avoid confusion in terminology I wish to preface my remarks with a brief statement relative to the classification of deafness. At the conference of Executives of Schools for the Education of the Deaf in June, 1937, the committee on nomenclature reported as follows: —

"The committee is very much concerned over evident effort of certain groups and individuals to classify the deaf and hard of hearing, not from the true physical angle, but from the wholly false basis of ability to speak and to use language. In other words there are many who are developing a new and most

Read before the Eye, Ear, Nose and Throat Section, Illinois State Medical Society, May 21, 1940, Peoria, Illinois.

damaging terminology. They say that the deaf are those born without hearing or who lose it before the acquisition of speech. They go on to say that those who suffer a hearing loss after speech and language have been established are hard of hearing. They are very vague in their wording but leave the layman and the parent with the impression that the child who loses hearing after speech and language have been acquired (the Adventitiously deaf) is hard of hearing. This is taking place in different parts of the country today and if continued and followed by teachers will prove a sad day for the deaf child's education and his future happiness. The committee desires to go on record and begs the Conference to do likewise as condemning such misleading and erroneous terminology."

"Because of the general use and misunderstanding, because of the desire of the profession to lessen the possibility of confusion, and because the terms are obsolete and are not commonly used by experienced educators, it is strongly recommended as part of this report that the following terms no longer be considered in our terminology, and that their use henceforth be discontinued: Deaf-mute, deaf and dumb, semi-mute, semi-deaf, and mute. Furthermore, in the same way, the term "deafened," which has been used to designate the hard of hearing, has confused many and has been used by individuals to mean deaf. The term is not needed; it is superfluous and confusing, and acts as a protection to certain advertising agencies to the detriment of the deaf."

1. THE DEAF: Those in whom the sense of hearing is non-functional for the ordinary purposes of life.

This general group is made up of two distinct classes based entirely on the time of the loss of hearing.

(a) The congenitally deaf — those who were born deaf.

(b) The adventitiously deaf — those who were born with normal hearing but in whom the sense of hearing became non-functional later through illness or accident.

2. HARD OF HEARING: Those in whom the sense of hearing, although defective, is functional with or without a hearing aid.

I present the findings of this committee which were adopted by the conference to show the interest and activity of that group.

George Shambaugh has said, "No one knows the extent of the World of Silence." I would change this to say, "No one knows the loneliness of the World of Silence." Only those of us whose work puts us in close contact with deaf children seem to appreciate the many heartaches which go on in those children. Heartaches which are so often hidden behind a mask of innocent and unconscious happiness which is the normal heritage of all children. Often the child does not know that he is deaf, very often he thinks he is actually stupid because he does not get along as well as the other children, with the result that he develops a feeling of inferiority. Those whose hearing has been defective from birth or early childhood and is chronic, must endure the condition to the end of their days — without respite or relief. Probably no one but the patient himself can fully understand the mental strain imposed by defective hearing. Even his nearest relatives may fall into the delusion that he could hear what they say so much better if he would only take the trouble to attend more carefully. They may come to think that he gives his friends unnecessary trouble by a certain mental laziness.

In proportion to the severity of their deafness most patients are forced into a degree of alertness and effort greater than that of people with normal hearing. They are, as it were, forever at the end of a very bad telephone line. The most casual remark comes to them in an incomplete, often in a distorted, form. They struggle to keep up with general conversation by qualities akin to those of a detective piecing together imperfect clues, half a phrase here and another there, to gain somehow or other the sense of what is said.

In a certain proportion of instances, such an unending struggle becomes beyond the capacity of the patient to sustain. In whole or in part, he gives it up and becomes more or less isolated, acutely unhappy, or apathetic. But it is clearly wrong to say that such a patient is lazy or inattentive. At the onset of deafness every sufferer makes an effort to hold his normal place in life. Despair and relaxation of the struggle only begin as the result of persistent failure.

How is the deaf child to know that he does not hear well? He thinks of his ears only as a piece of skin with many folds which hangs on the side of his head and must be washed so that he may pass maternal inspection before going to school. To him these folds of skin have no other purpose, and only after many years, years of endless strain on the nervous system it is found that his hearing mechanism has been at fault.

Hearing and seeing are the two senses which give us information of the surrounding world, while taste, touch, and muscle sense tell only of the things with which we come into immediate

contact, and smell, though a sense for remote objects does not serve man greatly in that capacity. The world of the child who is both deaf and blind is pitifully small. He moves in the larger world but is not a part of it.

The tragedy of blindness is widely recognized, because the disabilities of blindness are frequently brought home to us when we find ourselves in darkness. But deafness strikes no such cords of sympathy. Yet the deaf are at the very least as handicapped as the blind, for deafness is isolation and utter loneliness in a large world, the joy of which springs from social contact. Deafness in many instances is an even greater handicap because the inability to hear frequently results in the inability to comprehend. The deaf much more than the blind are thrown on their own resources. Gregariousness, the most precious of joys, is denied them. They stand isolated while the blind join in the melee of life. To them is lost the most vital stimulus, the sound of the spoken voice, which brings language, sets thoughts astir, and keeps us in the intellectual company of our neighbors.

Children are normally social beings, they receive biological sustenance from gregarious living. When the deaf child finds he can no longer communicate with or understand his companions is it any wonder that he feels isolated, that he is depressed, that he feels persecuted?

That hearing and speech are important in the normal development of a child may be seen when we compare the deaf with the hearing child between the ages of two and seven years. It will be found that the deaf child is at a stand-still while the hearing child is developing rapidly. Every moment of his awakening life he receives items of education through his hearing, so that not only are speech and language being continuously impressed upon his cerebral centers but by ceaseless reiteration they are stored up as sensory and motor memories. Thus the language-appreciating and language producing centers being intimately related, speech becomes automatic before education of the centers concerned with writing and more difficult language training begins, centers of later development in the history of the race than those of mere speech, and preceeded in the normal child by a pre-speech era of gesture language. It is this pre-speech era which becomes more fixed and consequently easier of use in the deaf child, to the detriment of oral training. Automatic speech is of high importance, and the training of the speech center in those children who become deaf at an early age would help them to approach the normal child's automatism.

The value of hearing in the physiological development of the normal child is shown by comparing the blind with the deaf. The former has far less difficulties in education. A main gate of instruction is closed to him, it is true, but it is one by which general effects rather than exact thought impressions reach the brain. If he hears, the speech progresses as rapidly as in the normal child, and his intellectual development proceeds at a nearly equal rate. Children who become deaf early in life obtain their general effects through the eye, but owing to their aural defect, they can neither obtain impressions of exact thought nor formulate their own thoughts in exact terms, so that they begin school on the intellectual state of a child of two. Plainly put, the deaf child's intellectual development is arrested for four or five years.

The study of deafness by modern experimental method is bringing about an entirely new conception of its nature. Probably the most important advance is in our knowledge about defects of hearing which do not amount to total loss. In this field, the gravity of the handicap, its stunting and withering effect on mental development and mental well-being in children is being shown as never before.

It has long been generally realized that children totally deaf from birth or infancy cannot learn to talk by natural means. They are taught to speak by laborious and artificial methods, and their whole education, although in many instances successful to an amazing degree, is based on artificial processes. Today it is plain that there is no such thing as a clear cut border-line between the "deaf and dumb" and that large section of the population of every age which suffers from defective hearing. The effects of deafness are to be seen in the little untaught deaf child, whose only method of communication with his parents is often crude gesture, and who knows nothing outside his own tiny world of sense experience.

A second important fact lies in the hereditary tendencies to speech. We represent a long line of speaking ancestors, the first of which existed untold ages ago, and are the outcome of an

evolution which has slowly elaborated those parts of the central nervous system concerned with speech from the beginning of our remote ancestry. The power to develop similar structural connections of nerve-cells and fibers has been handed on through countless generations, and rendered more and more perfect in each, until we are born with a potentiality to develop as complex and perfect nervous arrangement as those of an individual who has preceeded us. Thus the speech centers have been made more apt for expressing exact thought, and there is not only a hereditary tendency to speak, but also a hereditary tendency to develop the general faculties through and by speech.

The deaf child is engaged in a continual struggle to make himself understood and to understand others, but unlike the hearing child and the blind child, his natural yearning, including hereditary tendencies to speak, go unsatisfied.

Secondly, there is the effect of deafness on the patient's own speech. This involves a series of problems. Speech has been described by a great neurologist, Sir Henry Head, as a "March of events, acquired step by step in the life of the individual." It is true that the earlier years of life are those in which speech development is most rapid. The normal child of five speaks with fluency and with a considerable vocabulary. He has not, however, finished learning to talk. That is a process which continues without stop so long as life lasts. Not all of them are adopted and used, but even in old age, the listener with normal hearing probably makes some of them his own.

Besides this, the meaning of known words and expressions is constantly being enriched by further experience. The word "Mississippi," after the inundation of 1937, acquired new meaning in the minds of those who heard an eye-witness broadcast, a description of burst banks and flooded town. Still more did its meaning alter in the minds of those made homeless by the floods.

Karl Menninger asks: — "Has hearing more to do with the life of a man than that of mere auditory orientation." It certainly has. The vast majority of deaf individuals, some time during the course of their lives develop a feeling of inferiority which is exceedingly hard to overcome. When we add to this a peculiar sensitiveness, we have a difficult problem with which to deal. Of course, we realize that all handicapped individuals feel that life owes them something, but the adjustment towards a handicap seems more difficult with deaf persons than with others. Being without the intellectual companionship and feeling that they are not sure of themselves when it comes to understanding what is said, adding to this a certain amount of confusion and nerve strain the deaf child becomes metamorphosed. He loses his cheerfulness, he resents the actions of others, he feels his isolation.

Ruth Brickner in her very excellent and scientific treatise states that there is a psychiatric principle that under unbearable emotional stress an individual will break down in the direction of the weaker supports of the psychic structure. All of us who are dealing with the deaf know that there occurs all too frequently emotional explosions. By this, I mean an unstable mental condition, which is very often caused by the deafness itself which forces the patient into an apathetic state almost bordering on melancolia. Such a condition may result in a complete nervous breakdown or insanity. Dr. Brickner claims that the deaf suffer from depression and a feeling of persecution. "For to the unconscious mind, that level of our emotional life in which primative love and ego trends have their roots, acquired deafness is a mutilating blow to which the primitive response is rage and hatred." Add to these two states a feeling of isolation and is it any wonder that these children present the problems that they do.

The problem of deafness is an important one and has received little or no consideration, either from the family physician, pediatrician or specialist until the past few years. For centuries the deaf child was considered a hopeless problem. The child of school age, who could not hear, was usually placed in the class for those who comprehended slowly or else relegated to a seclusion which made life almost unbearable. In those tender years it was impossible for him to appreciate that he was suffering from a definite handicap. Until recently, there was no concern, neither child, nor parent, nor doctor appreciated the seriousness of the condition. Draining ears usually received some consideration, but this was confined to an attempt to stop the discharge. There is an old adage about there being two types of deafness, one (curable) due to wax in the ear, and the other (uncurable) is sent to the

otolaryngologist. Fortunately this pessimistic teaching is no longer true.

Schambaugh has said "Childhood is rightly regarded as the most precarious period in life so far as the ears are concerned. Early childhood is the danger period in the development of those profound defects of hearing that result in deaf-mutism." Sixty to seventy per cent. of deaf children become deaf before the age of three and eighty per cent. before five years of age. The pre-school years are the precarious years.

Then is it any wonder that embarrassment, reticence, inferiority, hatred, rage, and all the emotional reactions should develop in the child who cannot take part in the activities of the family, the games with his companions, or the story tellings of his associates.

To add to his handicap his parents, too, often look upon him as a burden, put him in a corner, or a secluded room and make him feel he is not wanted.

A discussion of any phase of the subject of deafness is not complete without reference to prevention. I need not emphasize that many of the psychological reactions in the deaf child may be helped if proper psychological procedures are employed. The psychiatrist who understands children and who can fathom the problems of the deaf child is a most valuable consultant.

In very recent years the beginning of formal education of the deaf child at an early age, namely the pre-school or kindergarten classes, have aided greatly in the prevention of many of the psychological problems.

More important, however, is the prevention of those diseases which produce deafness. It may be beyond the resources of modern epidemiology to stamp out nasopharyngeal infections and the infectious diseases, but much has been done and more will be done. Proper prenatal care may prove more beneficial than is at present predicted in the development of the fetus. Proper care during infancy and childhood will do much to improve the health of our babies. Combine this with immunization against diseases for which we have immunizing agents and which predispose to middle-ear infections, namely, whooping cough, scarlet fever, diphtheria, measles and smallpox and much will be accomplished in the prevention of otitis media and its complications. Add to these the early diagnosis of communicable diseases and the prompt administration of anti-toxins, vaccines, anti-sera and convalescent sera and in many more instances will these dire complications, which are so frequently more serious than the disease itself, be prevented.

The early diagnosis, prompt and energetic treatment of epidemic cerebrospinal meningitis, which, to name one disease only, is the cause in twenty per cent. of all adventitiously deaf will certainly diminish the number who have their auditory nerve destroyed by a toxic neuritis.

Within the province of the family physician and pediatrician lies the early diagnosis of communicable diseases and infection of the middle ear. Many of these need not occur if the nasopharynx of the healthy child is not allowed to become a center of latent sepsis.

When the conflagration has started and has spread to the middle ear, it is well to remember that it is not a minor condition which is being dealt with, but an insidious threat to hearing and even to life. Much marring of life can be prevented and much happiness brought about by the prevention of those diseases which so frequently result in deafness in children.

DISCUSSION

Dr. Robert H. Gault, Evanston: Dr. Drennan has very aptly referred to 3,000,000 children of school age in the United States who have defective hearing. That is the figure that has been furnished by Dr. Harvey Fletcher of Bell Telephone laboratories in New York City. It is based upon examinations of hearing in schools in New York City and elsewhere.

I lately took occasion to send one of my students to consult the Psychological Abstracts, — a journal that publishes abstracts of the Psychologic literature produced in the United States, — and I asked him to find out the number of articles of a scientific nature that had been published within the preceding five years and which could be interpreted as dealing with the fundamental problems of education generally. From among these I asked him to select those which dealt with basic problems of the education of the deaf and hard-of-hearing. He found that about five-eighths of one per cent. of all this literature in the United States is devoted to the fundamentals of teaching and training these 3,000,000 children who suffer from defects of hearing. To that situation I believe we may in very large measure trace whatever backward state of education of these classes may be found to exist. I am not disparaging teachers of the deaf. I am sure that in the last several years they have improved their work immensely. But I believe they would get on much better were the rest of us whose business it is to carry on research, doing what lies in our power to do.

I want to mention one thing that occurred to me while Dr. Drennan was reading his thoughtful paper. You and I have as a matter of course learned to use two or more senses in co-operation. I was talking some time ago with a friend of mine who spoke of the difficulty he had had one evening a short while previously in hearing what the actors in a play were saying on the stage. When he took up his opera glasses and saw their faces distinctly he heard them much more clearly than before. His eyes helped his ears. It is so with us in ordinary conversation. On one occasion I was seated near a woman about forty or forty-five years of age who is very close to being totally deaf. I remarked to her "You are a very good lip-reader." She said: "Do you see what I am doing with my hands?" She was grasping the arm of the wooden chair in which I was seated. She said further: "I see your face and at the same time I feel your chair vibrate with your speech and that helps me to know what you say." On her own initiative she had got hold of an important thing and had confirmed in her own experience the results of experiments that I had performed in my own laboratory which had shown me that when the deaf are trained, through whatever avenue, to feel the vibrations that correspond to speech while at the same time they observe the speaker's face they can add from fourteen to twenty-five per cent. to their expertness in understanding spoken language.

A day or two ago I received a letter from a woman in Los Angeles who described herself as totally deaf. She said that a friend had given her a hearing aid with a bone-conduction appliance. She got no satisfaction from using it in the ordinary manner but when she held the bone piece in her fingers she could feel the vibrations of spoken language and that thus she was aided in understanding speech.

So it is, I am more than ever convinced, that there may be a deal of profit in pushing experiments that are aimed toward discovering and perfecting ways and means for promoting the co-operation of sense, such as vision and touch or vibration. If those of us whose business it is to go about research will but stick to it we shall find the way and it will be of great advantage to the profoundly deaf in relation both to the interpretation and the production of speech. This is one thing that we are doing in my laboratory.

I shall mention another piece of work that we are doing. We call it the "re-education of hearing." I have been visited again and again, as you have also, by people who have recently purchased a hearing aid and who complain that they are not obtaining from it all the benefit that they think they should have and many of them are greatly discouraged. Some of them are ready to discard their instrument. Now if you have been going on with defective hearing during a period of years it is most probable that your defect is more serious in one range of frequencies than in another. Your audiogram shows the people who deal with hearing aids in what part of the range you need correction. Usually they are able to make an aid for you which will bring auditory stimuli to you in a much more normal relation of pitch and intensity than that to which you have been accustomed. From that moment your auditory experience is so unfamiliar to you that you are unable to make it out and you become discouraged.

In our laboratory we are trying to devise ways and means whereby we can help such people without too great labor to train themselves to use the hearing aid that should be a boon to them. This is what we call "re-education of hearing. I think it is a good track to follow for some time to come.

You men who are daily treating your patients are confronted with innumerable problems of a medical nature of which I am totally ignorant. And these same patients bristle with psychologic problems. In a broad sense they can be described as problems of learning and of personality development. So little has been done in this area that we can truthfully say the surface has been no more than scratched.

RENAL CYSTS COMMUNICATING WITH THE PELVIS

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We had intended this afternoon to present a few rather unusual anomalies of the urinary tract, there being in several cases complicating features lending clinical interest thereto. In view of the limited time we shall present only one of these. This is the phenomenon of cyst in the renal parenchyma communicating with the pelvis, of which we shall present a series of four cases. Ordinary solitary cysts of the kidney, although not frequently demonstrated radiographically are not infrequently found at autopsy or in surgically removed kidneys. These as a rule are quite small. Cysts of the kidney often reveal no change in the pyelogram; in other cases, where the cyst is large or located near the renal pelvis, a pressure defect may be noted and in some cases a modification of the adjacent calyces. In cases of large cysts a change in the position and axis of the kidney may result. In such cases the large cyst may be palpable through the abdomen. Some of the smaller solitary cysts are believed to be on a retention basis, resulting from occlusion of the uriniferous tubules; they may, in some cases, be a by-product of chronic nephritis. In other cases, they are believed to be congenital.

Read before Section on Radiology, Illinois State Medical Society, May 21, 1940, Peoria.

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Cysts communicating with the renal pelvis are very rare. In fact Young and Waters in 1928 stated that such communication never occurs in the case of solitary cyst. Since then a few such cases have been reported in the literature. In a period of over six years at the Cook County Hospital we have seen only four such cases, these occurring within a period of one year. Only one of these was proven surgically; in several of the other cases difference of opinion may exist as to interpretation. These cases were all under the care of Drs. Dorrin Rudnick and James Choy of the Genito-urinary department of the Cook County Hospital.

Case 1 was that of a female patient, aged 41, who was well until a year previously, when she had an attack of nausea and abdominal soreness, lasting a week. She was then well until three months before entering the hospital when she had a knife-like pain running along the course of her lowest rib from the spine to the middle of the abdomen. The pain lasted three weeks almost continuously. No nausea was present. Then, a month before entering the hospital a similar pain occurred in the left side and nausea with vomiting occurred persisting until her entrance into the hospital.

Physical examination revealed a well developed, well nourished white female, not acutely ill. Blood pressure 125/75. Temperature 98°.

Liver was slightly palpable two fingers down but the physical findings were otherwise essentially negative including the Murphy punch.

Urine revealed albumin and a few red and white blood cells, once. Was negative twice. Acetone 4-plus was present on entrance.

The Kahn test was negative. Temperature 98-100°. Red blood count varied from three and one-quarter to three and three-quarter million. White blood count 4600 to 10,600. Non-protein nitrogen 32.

Cystoscopy revealed a normal urethra and bladder mucosa.

Catheters passed unobstructed on either side. The culture from the right side was negative. No specimen was obtained from the left side. A retrograde pyelogram was done.

The preliminary film (slide 1) revealed four calculi to the right of the first lumbar vertebra, which, so far as radiographic appearance was concerned, could be gall stones or renal calculi. Slide 2 in which the renal pelvis was partly filled with opaque materials revealed these calculi to be in a large cyst-like area communicating with an upper calyx. Slight periostitis was also noted in the 12th right rib. Slide 3 revealed a well-defined oval cystic area in the upper pole of the kidney pelvis communicating with the superior calyx and filled with opaque material. The calculi could be faintly seen through this opaque medium. The left pyelogram revealed essentially no abnormality except that there appeared here also to be a very small cystic area which communicated with the inferior calyx. The patient went to surgery, a nephrectomy being done by Dr. Rudnick. The cystic area was found in the upper pole containing four calculi. Slide 4 reveals the opened kidney. The pathological study of the specimen was made by Dr. Alex B. Ragins. He reported as follows:

Specimen consists of a kidney, previously opened. 11.5 x 5.5 x 4 cm. In the region toward the upper pole the surface contains a cystic mass previously opened 2 x 2 cm. in the region of which the capsule is adherent. From the remainder of the surface the capsule strips with ease and the surface is light purple-gray to light tan-gray. On section, the cystic mass replaces the cortex and cortical portion of the mass is 2 mm. in greatest thickness. The cyst cavity measures 2.2 cm. in transverse diameter and 2 cm. in vertical diameter. Inner lining is smooth, light, purple-gray to pinkish-gray. Toward the pelvis in the region of the cyst is a needle sized opening which communicates with one of the calyces. This tract is 3 mm. in length. Pelvis of kidney is pale gray with pinpoint up to 4 mm. in diameter purplish-red areas.

Ureter: .8 cm. in circumference at utero-pelvic junction. Mucosa is pale gray with submucous hemorrhages.

Gross diagnosis: Cortical cyst with communication by a small fistulous tract with a calyx of the kidney. Microscopic study reveals the lining membrane to consist of several layers of transitional cell epithelium. There are present very slight focal pyelonephritic accumulations of round cells. His conclusion was that the cyst was congenital in nature. The finding in the left pyelogram suggesting a possible small cystic area also on this side tended to confirm this.

Case 2 was that of a white male, 28 years of age. He had a first attack of pain in the right lower quadrant, one and one-half years previously, this not being preceded by generalized abdominal pain. The attack lasted three to five hours. He had recurrent attacks since that time, these at times lasting 24 to 48 hours. During the few months before entering the hospital the patient had three such attacks, these being similar in nature but with the pain in the left lower quadrant instead of the right. These lasted ten to fifteen minutes and were associated with nausea but no vomiting. He gave a history of frequency, six or seven times daily with bilateral lumbar pain.

Examination revealed the patient to be not acutely ill. He had slight tenderness in the McBurney area, but the Murphy punch was negative. The other findings were essentially normal.

The temperature varied from 98.4 to 100°.

The tentative diagnosis made by the examining physician was that of an interval appendix.

The Graham Cole test revealed a non-visualization of the gall bladder. Three small opaque oval shadows several millimeters in diameter were seen to the right of the first lumbar vertebra. So far as this radiographic finding was concerned, these could be either gall stones or renal stones. Lateral views were taken

but the shadows were not demonstrated. Several films of the K. U. B. tract (slide 5) were taken and the opaque areas described appeared to have a constant relationship to the kidney outline, being in the projection field of the upper pole.

Because of the frequency, cystoscopic study was made. There was found an increased vascularization at the neck of the posterior urethra. The verumontanum was swollen and edematous and the ureteral orifices were injected. The right catheter appeared to meet an obstruction 20 cm. up but the function was good on either side, the red dye showing in three minutes on the right side and in two on the left. The urine revealed no pathologic findings and the cultures of both specimens were negative. A pyelogram was done.

The preliminary film revealed findings as described above. The right pyelogram (slide 6) revealed a small oval area communicating with the upper calyx, filled with the opaque medium. By comparison this was seen to be in about the same region as the calculi previously described. The findings were interpreted as those of a solitary cyst communicating with the renal pelvis and containing three small calculi. The calculi were thought to be in the kidney area rather than the gall bladder for three reasons: 1. the relationship to the kidney outline was constant on a number of the films 2. the shadows were not seen on the oblique view (slide 7); had they been anterior to the spine they would probably have been visualized, 3. they were not seen to be outside the area of the pyelogram in either the A. P. or oblique views. They were considered to be in the cystic region after comparison between the flat film and the pyelogram; they were here seen to be in the projection field of the cystic area. The question as to whether or not the area was really a cystic area communicating with the pelvis or a dilated calyx with constriction of the adjacent infundibulum may be raised. This cannot be positively determined but the rotund contour of the area would point rather to a cyst.

Case 3 was that of a white male of 34, who was well until nine days before entering the hospital. He then developed colicky pains in the upper abdomen especially in the right upper quadrant; these developed while he was riding in a car, and continued as cramp-like pains. He vomited and went to bed. The pain lasted 36 hours. He then developed cramping colic through the entire abdomen, which continued for eight days. He had no bowel movements for three days after the onset of the pain but these were regular since. There was no history of hematuria.

Physical examination was essentially negative. The red blood count was 3,900,000 and the white blood count 5050. The urine revealed a specific gravity of 1.018. No abnormal findings were present. Because of his being a painter the possibility of lead colic was considered although the blood and bones gave no characteristic findings.

An x-ray of the abdomen revealed a number of calculi thought, at first, to be in the gall bladder (slide 8).

The patient was cystoscoped and the urinary bladder was found to be grossly normal. The red dye came through on the right side in four minutes and on the left in five. A right pyelogram was made. This revealed a rather large oval cystic bulge from the lateral aspect of the upper calyx of the renal pelvis (slide 9). The lateral view revealed it to be anterior. (slide 10). The stones were not seen outside the renal pelvis area on either the A. P. or lateral pyleogram. This suggested that they were present within the region filled with opaque material. Comparison with the preliminary film suggested that an aggregation of this size could only be within the cystic region described. We concluded as a result that the calculi were probably within the cystic region. The question may arise as to whether or not the area described is really a cyst communicating with the pelvis or whether it is just an anomaly in the contour of the renal pelvis since it appears to be continuous therewith there being no intermediate narrowing as in the previous cases. This, however, would be a question rather of terminology than one of practical significance.

Case 4 was that of a female patient of 27 who had previously been in the hopspital because of dementia precox. She was admitted as a gastro-enteritis, giving a history of pain in the right upper quadrant and right lumbar area —

frequency
nocturia
polydypsia
fever and chills
headache

for three days.

She had had a cough for two weeks and vomiting and diarrhea for the past day.

Examination revealed a well-nourished white female, not acutely ill.

The temperature ranged from 101 to 102.6°. The pulse was 88, respiration 24 and blood pressure 74/60.

Palpation revealed the left kidney to be not palpable, the right being palpable. The Murphy punch was definitely positive. A slight tenderness was present on deep palpation in the right upper quadrant. The spleen was palpable.

Urinalysis revealed albumin (2 plus) once and absent on two examinations. The number of white blood cells in the urine was within normal limits. No chemical blood was found at any time. The urine cultures were negative as was the blood culture.

The preliminary impression as the patient entered the ward was that of perinephritic abscess.

The following day the temperature dropped to 98° and 99°.

Cystoscopy was done by Dr. Rudnick. The urethra was granular throughout and the trigone was quite inflammed. The bladder was but slightly involved but the ureteral orifices were edematous, especially the left. They were catheterized easily. Obstruction was encountered on the left side about 20 cm. up but this

was easily passed. The red dye passed through in six minutes on the right side. No secretion was obtained on the left. Study of the urine from the right side revealed very much pus. B. Coli were found on culture. Bilateral pyelogram was done (slide 11). Lateral to the right renal pelvis within the midportion of the kidney there was seen an oval shadow 5.5 x 6.0 cm. in diameter containing opaque medium. There was considerable spreading of the upper calyx from the lower by the extrinsic pressure on the pelvis, one of the inferior calyces being compressed. In the left kidney there was seen evidence of an extravasation, which was absorbed on a later pyelogram (slide 12). This later left pyelogram also revealed a small oval cystic area 0.5 x 1.0 cm. in diameter filled with opaque material and communicating with the lateral portion of the upper part of the renal pelvis below the superior calyx, there being a narrowing proximal to this area.

In this case it may be of interest to note that the preliminary specimens revealed no pus in the urine but after the temperature had dropped to normal and the patient was catheterized much pus was found. The significance of this will be discussed later.

In this case it may be necesary to differentiate between a cyst and a renal abscess which has broken into the pelvis. The sharply defined periphery of the area is strongly in favor of the interpretation of a cyst which communicates with the pelvis. The spreading of the calyces by the pressure instead of invasion thereof by destruction of the intervening parenchyma also favors this interpretation. The small cyst on the other side is also in harmony therewith. Infection was evidently present and will be referred to later. Patient could not be surgically treated because of her mental state and left the hospital after improvement occurred.

In the four cases cited of solitary cysts communicating with the renal pelvis three contained stones of varying number. In these cases it is quite possible that the symptomatology was due to the calculi rather than to the cyst directly. In the fourth case the cyst presumably became infected and the symptoms were due to toxic absorption when occlusion occurred, the temperature dropping to normal when the drainage became adequate through the ureter. This conclusion appears to be warranted by the fact that an early examination revealed a normal number of pus cells in the bladder urine while in a later examination the urine from the right ureter was loaded therewith. It may be a question as to whether or not, in certain of the cases described, some of the symptoms were due to independent factors. They probably were. It is quite possible that an uncomplicated pelvic cyst may be asymptomatic, being found only incidentally. Indeed it is difficult to see why in such a case symptoms should arise. Because of the stasis, however, the opportunity for complications as calculi and infection is excellent. A cyst of this type can be usually readily diagnosed from the pyelogram where it is seen as an oval area extrinsic to the pelvis proper, filling up with the opaque medium. Where the cyst is large, as in Case 4 extrinsic pressure on the pelvis is evident. Where calculi are present and the lesion is on the right side, differentiation must be made from gall stones, as in the one case cited. The lateral view will then be of value in the differentiation. It is also desirable to have a lateral view after the injection of opaque medium in order to identify the location of the calcareous shadows with that of the cyst as, of course, the calculi may be present in the renal pelvis. Other points in differentiation were discussed under Case 2. The cyst may, in some cases, have to be differentiated from an inflammatory constriction of an infundibulum with dilatation of the calyx proximal thereto as is noted in slide 13. This can usually be done because, in this case, the area is present at the site of the calyx and not extrinsic thereto. The rotundity of a cyst is, moreover, probably more pronounced than in the case of a dilated calyx.

In other cases, although rarely, it may be necessary to differentiate the cyst from tuberculosis where ballooning out of the calyces may occur. In this case there is usually multiple involvement and other evidences of renal tuberculosis may be present. This is illustrated in slide 14.

DISCUSSION

Dr. M. J. Hubeny, Mr. Chairman, Ladies and Gentlemen: Dr. Bennett has covered the paper so completely that I really have nothing to say except reiteration.

The most interesting part of this presentation is the presence of stones in each of the cases and their location would make one suspicious of the possibility of cysts. However, by the urographic methods it is possible to definitely establish the existence of these cysts because of their communication with the pelvis. It was formerly thought that cysts, at no time, communicated in this manner.

It is hardly necessary to discuss the possible methods of differentiation before this group as you are all aware of the possibilities of simulants and the methods needed.

Dr. Bennett (Closing the discussion);

The question has been asked whether the cysts may be due to supernumerary calyces which are dilated. In case 1, if the cysts were due to dilatation

of a calyx, I do not believe the narrow communicating tract would be present unless it is assumed that this is due to congenital narrowing here, or to an inflammatory constriction. The latter was not suggested by the pathologic study. Moreover, no evidence of a supernumerary calyx is noted in the corresponding position in the other renal pelvis. The possibility, however, of this interpretation is not excluded, — especially in Case 2.

In Case 3 I mentioned that there may be a congenital dilatation of the calyx, but here it would be a matter of terminology as to whether to designate it such, or as a cyst.

In Case 4 I believe the huge size of the cystic area makes it improbable that it is due to a dilated calyx. Here too, a narrow tract connects this with the renal pelvis.

CEREBRAL INSULT FOLLOWING HYPOGLYCEMIC SHOCK THERAPY, WITH RECOVERY

A CASE REPORT

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The literature of insulin shock therapy deals extensively with protracted comas and their complications. Baker and Lufkin[1], Finiefs[2], Wortis and Lambert[3] and a number of other workers have been among those who have reported on protracted comas and their complications. In the following case there occurred a train of sequelae apparently with little direct relationship to the length of coma or the dosage of insulin. The patient showed evidence of cerebral involvement after a number of hours of full wakefulness.

CASE HISTORY

G. G., a white, poorly nourished, poorly developed young female, 23 years of age. Physical examination revealed nothing unusual, except for a blood pressure of 140/90 and moderate tachycardia. Blood count: white cells, 7,400, R.B.C. 4,080,000; hb. 62%, color index .77.

Her mental state was marked by extreme negativism. Occasionally she would run around the room, was resistive and combastive, and, at times, she would assume statuesque postures; she was always mutistic. The classification given was dementia praecox, catatonic type.

She was placed on insulin therapy 8/21/39. She received six insulin hypoglycemic treatments, the last one, 8/30/39, of 50 units. Previous dosages never exceeded 50 units.

Late on the afternoon of 8/30/39, following regular insulin hypoglycemia from which she had fully recovered following the usual administration of sugar, patient became acutely disturbed, combative, resistive and noisy. She was given routine sedative hydrotherapy. Later, in the evening of the same day, the patient suffered a generalized convulsion. She was given glucose on the supposition of a protracted hypoglycemic state. About 11:30 the following morning (8/31/39) patient had another generalized convulsion of the grand mal type. Even in the quiescent state it was observed that there were constant myoclonic contractions confined to the left side of the body, conspicuous in the left leg, arm and shoulder. Rigidity of the left arm was also noted. On the afternoon of the thirty-first she became stuperous and had another generalized convulsion with blood-tinged sputum from a lacerated tongue. The convulsions began with contractions in the left leg, then included the left arm, and then became generalized as more or less typical epileptiform seizures of the grand mal type.

Physical examination at this time showed no evidence of pulmonary edema or other involvement. Deep reflexes were increased on the left side. Myoclonic twitching was pronounced in left arm and leg. There was a suggestion of a Babinski on the left side, but no ankle or patellar clonus.

She had five more grand mal convulsions in the evening. At this time the reflexes were as follows:

Reflexes	Right	Left
Biceps	+	+
Triceps	+	+
Patellar	+	+++
Achilles	+	++++
Babinski	↓	↑

Blood chemistry examination performed at this time showed 129 mg. of sugar. Spinal puncture showed clear fluid, under considerable pressure, containing five cells per cubic mm.; negative Ross Jones and Pandy, with a gold curve of 0122223322.

The patient was given intravenous sodium amytal, hypodermoclysis of 1,000 cc. of 5 per cent. glucose in saline, which was repeated later; retention enema of magnesium sulphate.

The following morning patient's condition was greatly improved. She was fully awake and had no more myoclonic twitching or convulsions. There was now no motor paralysis or rigidity, but only a slight weakness of the right upper extremity. At this time the reflexes were normal as follows:

Reflexes	Right	Left
Biceps	+	+
Triceps	+	+
Patellar	+	+
Achilles	+	+
Babinski	↓	↓

No further convulsions or any other neurological

symptoms recurred from then on. Mentally, there was no improvement. To date, no residual neurological symptoms have been noted in this case. It may be pertinent to add here that after a lapse of six weeks the patient was given metrazol shock therapy and to date has had 15 grand mal seizures in the course of this treatment with no untoward effects and some mental improvement.

COMMENT

We have here a patient, who, following the sixth hypoglycemic treatment, lapsed into a comatose condition with repeated convulsions of the grand mal type, apparently the result of irritation of, and possibly petechial hemorrhages into, the motor cortex. Although protracted comas and delays in insulin shock therapy are fairly common, this patient presented an unusual feature in the generalized convulsions and signs of focal irritation. This case also draws attention to the fact that in these instances of borderline reversibility, as shown notably by Wortis and Lambert[3], fatalities can be avoided by prompt and adequate treatment.

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EXTRARENAL AZOTEMIA

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The complete medical study of a patient usually includes certain essential laboratory procedures amongst which are nonprotein nitrogen and urea determinations of the blood. Not uncommonly such reports indicate increased nitrogenous retention. This may lead the physician to believe that kidney disease is present, but on further clinical and laboratory study of the case, he finds no evidence of kidney damage. Such findings of increased nitrogenous retention in patients showing no kidney pathology, have been termed extrarenal azotemia.

Many phases of this subject have received considerable mention in recent medical literature, the best and most comprehensive discussions being by Jeghers and Bakst[1] of Boston, Gomori and Podhradszky,[2] and McDonald[3] of the Cleveland Clinic.

The nonprotein nitrogen in the blood at any one time must depend on two factors: the rate of production and the rate of excretion. In a discussion of extrarenal azotemia then, one would have to discuss those factors increasing the production of nitrogenous waste, and those extrarenal factors diminishing its urinary excretion. As the nonprotein nitrogen in the blood is intimately related to the protein catabolism, it seems advisable to review first the essentials of protein metabolism.

The protein in our food is not acted upon until it reaches the stomach, where the pepsin and hydrochloric acid break it down to proteans, meta proteins and peptones. When these enter the duodenum and small intestines, digestion continues with the aid of trypsin and erepsin until these proteins are broken down to their simplest forms of polypeptides and amino acids. These acids are then absorbed into the portal system and carried to the liver. Here they may be deaminized and the nitrogen excreted as urea. The non nitrogenous residue may be converted to carbohydrates or fats or burned directly to carbon dioxide and water for energy purposes. If the amino acids pass through the liver unchanged they may be temporarily stored, then used to build tissue proteins. After remaining as constituents of protoplasm for some time, the tissues are broken down and the amino acids are again liberated. This process of anabolism and catabolism of protein goes on continuously, but is influenced considerably by the age of the individual, his activity, health and diet. Carbohydrates and fats are known as sparers of protein. When there are sufficient carbohydrates and fats in the diet, the adult individual will call on these for the greatest part of his energy requirements and will use the proteins only to make up the nitrogen or protein equilibrium. In that case the least amount required would be about 50 Gm. of protein, the amount catabolized per day.

The products of protein metabolism are found

Read before the bimonthly meeting of the staff of the Mount Sinai Hospital, Chicago, February 19, 1940.

in the blood and lymph, chiefly in the form of urea, amino acids, uric acid, creatinine and the so-called undetermined nitrogen group. The nitrogen values of all these substances when added together give us the total nonprotein nitrogen of the blood. This usually ranges between 28 and 42 mg. per 100 cc. with an average of 32 mg. The urea nitrogen varies between 9 and 16 mg. per 100 cc. with an average of 12 mg. The amino acid nitrogen varies between 6 and 8 mg. with an average of 6 mg. The uric acid and creatinine make up a very small percentage. The undetermined nitrogen averages about 14 mg. or about one third of the total nonprotein nitrogen of the blood.

An increase in any of the above substances results in an increase in the total nonprotein nitrogen. But the fluctuations which have been observed in these constituents other than urea have been very small. This is true under physiological as well as pathological conditions. Therefore, it can be said that the total nonprotein nitrogen usually depends upon and runs parallel with the urea content. Since the urea concentration of the blood at any one time is influenced a great deal by the rate of protein destruction, it naturally follows that the rate of protein catabolism is one of the fundamental factors in determining the nonprotein nitrogen level of the blood. Clinically this factor seldom acts independently. In cases of increased nitrogenous retention one or more other factors usually play important roles. Some of these may be extrarenal in character.

Drop in blood pressure is one such example. Glomerular filtration depends upon several factors, one being the hydrostatic pressure. This is represented by the difference between the capillary pressure and the osmotic pressure of the plasma proteins. Ordinarily, the osmotic pressure of the colloids in the blood plasma is 30 mg. of mercury. It has been observed that if the peripheral blood pressure falls below 70 mg. of mercury, anuria will result.

Lowering of the sodium and chloride content of the blood may lessen the urinary output.[4] Various authors differ as to the exact mechanism involved, but seem to agree that certain concentrations of these substances are essential for the maintenance of the normal blood plasma volume which is necessary for excretory purposes.

Dehydration may also affect renal function. Several reasons are given for this. First, dehydration limits the available fluid for excretory purposes. Second, dehydration has been shown to increase protein catabolism. Third, it diminishes the blood flow through the kidneys thus lowering the capillary blood pressure and finally, dehydration tends to increase the colloidal osmotic pressure of the blood and thereby lessen the hydrostatic pressure in the glomeruli.

Marked liver damage may cause an increase in nonprotein nitrogen. This increase is due to the accumulation and retention of amino acids which cannot be deaminized and converted into urea by the damaged liver.

Finally, various types of colics may cause a so-called reflex anuria and bring about an increased nitrogenous retention.

Clinically extrarenal azotemia has been observed under physiological as well as pathological conditions.

PHYSIOLOGICAL CONDITIONS:

A diet rich in protein results usually in a higher nonprotein nitrogen level. It reaches its maximum three to four hours after a meal. This is best explained by the excess of amino acids in the blood due to the increased protein digestion and the excess of urea due to the increased protein catabolism. Physical exercise, by increasing protein catabolism, may increase the nitrogenous waste in the blood, especially when the food and water intake is restricted. Finally, Okey and Erickson[5] have noticed an increase in the nitrogen level of the blood in women just before menstruation.

PATHOLOGICAL CONDITIONS:

Lemnox,[6] who has studied the relationship between starvation and nitrogenous retention, reports a definite increase which disappears on taking food. As one would expect in the case of starvation, the person after using up the carbohydrates and fat reserve, calls upon his own body proteins and thereby brings about an increased protein catabolism. If this starvation is accompanied by dehydration, the nitrogenous retention will be increased still further.

Gastro-intestinal obstructions will bring about an azotemia. The mechanism is similar to that of starvation. It is not due as was previously thought, to absorption of toxic products of protein digestion from the obstructed loops of bowel,

since nitrogenous retention will also occur when the obstruction is at the pylorus[7] or higher.

Endocrine disturbances may tend to elevate the nonprotein nitrogen level. Hyperthyroidism[8] with its increased metabolism may be a cause, unless this increased demand for fuel is met by a high carbohydrate high caloric diet. In certain tumors of the posterior pituitary, the antidiuretic factor may be increased sufficiently to inhibit the action of the kidneys. In Addison's disease the renal function is impaired. Here we have a number of factors at work. There is a disturbance of sodium metabolism, there may be vomiting, diarrhea with dehydration, blood concentration and marked fall in blood pressure, all tending to diminish urinary excretion. The convulsions following parathyroidectomy will cause a marked increase in muscular activity and thereby bring about an increased protein catabolism. According to Haden and Orr[9] such rise in nonprotein nitrogen level of the blood is almost entirely confined to the undetermined nitrogen fraction.

In diabetic acidosis where there is a faulty and wasteful burning of protein, nitrogenous retention may result.

Transitory increases in nonprotein nitrogen have been noted following severe hemorrhages.[10] Several reasons have been given to account for this. The dehydration following the hemorrhage may be one factor. It has also been shown that where plasma proteins are markedly decreased, the endogenous protein catabolism is increased. Also it has been shown that the nonprotein nitrogen content of the tissue fluids is somewhat higher than that in the blood. Therefore when the blood volume is formed from the tissue fluids, the nonprotein nitrogen of the blood may be increased.

Diseases accompanied by fever result in increased protein catabolism.[11] This is due not only to increased energy requirement, but also to an active destruction of tissue. The infection or intoxication may bring about an actual autolysis of tissue.[12] Therefore fevers may bring about an elevation of the nonprotein nitrogen of the blood.

SUMMARY

1. Extrarenal azotemia is a term used to describe an elevation of the nonprotein nitrogen level in the blood in patients showing no kidney disease.

2. The basic mechanisms depend upon factors which increase protein catabolism or diminish urinary excretion or both.

3. Extrarenal azotemia may occur under physiological as well as pathological conditions.

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SULFANILAMIDE AND CONVALESCENT SERUM IN SCARLET FEVER

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Chemotherapy with sulfanilamide or its derivatives occupies a prominent position in laboratory and clinical investigation. The established benefits of this drug in other streptococcal infections would lead to the belief that sulfanilamide would be of value in scarlet fever. Many clinical studies, attempting to evaluate chemotherapy in this disease, have been reported but resulting opinions have been controversial. It was for this reason that we made an analysis of our material, feeling that additional information would be timely.

Plan of Investigation. Physicians who use convalescent scarlet fever serum in their private cases of scarlet fever send reports to the Serum Center. These reports contain all pertinent information on the patient, the illness, the therapy,

From the Samuel Deutsch Convalescent Serum Center, Michael Reese Hospital, Chicago, Illinois.

and the results. With the advent of sulfanilamide and its reported success in the treatment of streptococcal infections, many physicians informed us that they were supplementing convalescent serum therapy with chemotherapy. From January 1938 to May 1939, inclusive, specific information was submitted by physicians on the use of sulfanilamide or its derivatives; the dose, the time of starting and the period of administration of the drug. We selected for analysis all reports of patients treated with adequate doses of convalescent serum. Cases with complications at the time treatment was instituted were excluded. We also omitted from this study those reports of patients treated early in the disease with sulfanilamide and subsequently with convalescent serum because of failure to respond to chemotherapy because we had no comparable controls. The remaining reports fell into two groups. The first and larger group of cases was treated basically and fundamentally with convalescent serum and will be called the "serotherapy" group. A small number (about 8%) of these cases were given supplementary sulfanilamide later in the disease because of unsatisfactory progress or complications. These were included in the serotherapy group, regardless of the dose of sulfanilamide, because sulfanilamide was only a delayed and subsidiary therapy. The second group of patients were started on sulfanilamide and given convalescent serum simultaneously or within the same 24 hour period, the aim of the physician being to utilize the beneficial effects of both agents. This group is designated as the "serum-sulfanilamide" or "combined therapy" group, and here only cases receiving a daily dose of sulfanilamide of not less than 3/8 gr. per pound body weight were included. The results in these two groups were analyzed, tabulated and compared. From our past experience with the use of convalescent serum in scarlet fever[1] we expected good effects on the acute symptoms and a relatively low mortality and low incidence of complications, but we felt that these effects might be enhanced by the addition of sulfanilamide because the drug has a mode of action[2] different from convalescent serum.

The difficulties confronting a study of this kind and the hazards in drawing conclusions must be fully appreciated. Scarlet fever is a highly variable disease, known to differ widely from place to place, year to year, and season to season. It is also well recognized that the disease is more severe and complications more frequent in the younger age groups. Furthermore, there is no standard criterion for the designation and interpretation of complications. This is well illustrated in Tables 2A and 2B where the recording of complications in the different reports is so lacking in uniformity that it is impossible to compare one author's series directly with another's. Furthermore, large numbers of cases are necessary for conclusive results.[3]

The two groups analyzed in this communication are comparable. The patients in both groups came from the same region, were ill at the same period of time, and suffered a comparable degree of severity of illness. There were slight differences in average time of institution of treatment and in the age groups in the two series, both in favor of the serum-sulfanilamide group (see Table I). The reports submitted to us showed that the patients in both groups were attended essentially by the same physicians so that, on the whole, both groups were subjected to comparable interpretation and reports of complications. It would have been much more satisfactory if both groups had had an equally large number of cases, but we were unable to control this circumstance.

RESULTS

Prophylaxis: Six cases came to our attention, in which sulfanilamide was used for prophylaxis. These cases are abstracted briefly because there are so few references on this subject.

Case 1: An adult male (physician) in contact with several cases of scarlet fever received sulfanilamide, 20 grains daily for two days and then 30 grains daily. On the sixth day, the patient developed scarlet fever of moderate severity.

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2. Lockwood, J. S., Coburn, A. F., and Stokinger, H. E.: Studies on the Mechanism of the Action of Sulfanilamide. I. The Bearing of the Character of the Lesion on the Effectiveness of the Drug, J.A.M.A. 111: 2259 (December 17) 1938.

3. (a) Wesselhoeft, C., and Smith, E. C.: The Use of Sulfanilamide in Scarlet Fever, New England J. Med. 219: 947 (December 15) 1938. (b) Schwentker, F. F., and Waghelstein, J.: A Note on the Use of Sulfanilamide in Scarlet Fever, Baltimore Health News 15: 41 (June) 1938.

Case 2: A 7 year old boy exposed to scarlet fever received sulfanilamide, 20 grains daily. On the fifth day the patient developed scarlet fever which appeared to be mild, but subsequently a mild nephritis developed.

Case 3: An adult female exposed to scarlet fever received sulfanilamide, 90 grains daily. The patient developed scarlet fever of moderate severity (time not stated).

Case 4: A 5½ year old girl developed a submental abscess with cervical adenitis for which she received 15 grains of sulfanilamide daily. On the 9th day, the patient developed scarlet fever of moderate severity.

Case 5: An adult female developed streptococcic pneumonia for which she was given sulfanilamide, 20 grains daily. On the 14th day, the patient developed scarlet fever of moderate severity.

Case 6: A 13 year old boy developed an infection of the toe with suppurative lymphadenitis (subsequently found to be staphylococcic in origin) and was given sulfanilamide, 60 grains daily. On the 2nd day, the patient developed scarlet fever of moderate severity.

We do not feel that any conclusion can be drawn from this scanty experience. It is even possible that some of these patients had a rash and fever from the sulfanilamide, although there were characteristic signs and symptoms of scarlet fever. The literature[4] on the prophylactic use of sulfanilamide for scarlet fever is sparse and we could find no reports of controlled studies.

Since the prophylactic value of sulfanilamide for scarlet fever has not yet been established, its general use to protect against the disease is open to question. Drug fever and rash are sufficiently common to cause confusion. Instances of scarlatiniform sulfanilamide eruption leading to a false diagnosis of scarlet fever and unnecessary quarantine have been cited.[5]

Effect on Acute Symptoms. Our study revealed that the patients in the serotherapy and serum-sulfanilamide groups had an identical course of illness during the acute stage. Over 90% of patients in both groups experienced a rapid amelioration of the acute symptoms. Since the relief of symptoms and decrease in duration

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5. Garvin, C. F.: Complications Following the Administration of Sulfanilamide, J.A.M.A. **113**: 288 (July 22) 1939.

TABLE I. COMPLICATIONS IN SCARLET FEVER

	SEROTHERAPY GROUP Convalescent Serum							SERUM-SULFANILAMIDE GROUP Sulfanilamide and Convalescent Serum						
Age	0-2	3-5	6-10	11-15	16 & Over	Total #	Total %	0-2	3-5	6-10	11-15	16 & Over	Total #	Total %
# Cases	114 (9%)	387 (30%)	620 (48%)	86 (7%)	72 (6%)	1279	100	12 (6%)	54 (26%)	109 (54%)	13 (6%)	17 (8%)	205	100
# Cases with No Complications	94	311	516	74	62	1057	83	10	41	94	12	17	174	85
Average Day Disease Serum Given	3.1	3.0	3.1	3.1	3.4	3.1		2.8	3.0	2.8	2.5	3.0	2.8	
Average Day Disease Sulfanilamide Started								2.4	2.8	2.4	2.0	2.7	2.5	
Average Dose Sulfanilamide*								0.88	0.70	0.55	0.53	0.39	0.55	
Average # Days Sulfanilamide Given								6.5	6.9	5.1	5.5	7.1	5.9	
COMPLICATIONS														
Adenitis	10	37	48	3	1	99	7.7	1	6	12	1		20	10.0
Otitis Media	8	32	38	4	1	83	6.5	2	8	2			12	6.0
Mastoiditis		2	5			7	0.6	1	1	1			3	1.5
Nephritis	2	4	12		2	20	1.6			3			3	1.5
Sinusitis	1	3	7	3		14	1.1			1			1	0.5
Endocarditis			3	1		4	0.3		1				1	0.5
Other	1	8	9	2	6	26	2.0		1	3			4	2.0
Death	2	2	1			5	0.4					1	1	0.5
Total	24	88	123	13	10	258	20	4	17	22	1	1	45	22.

* Calculated as grains/day/pound body weight from age-weight tables.[8]

of fever was not more prompt in the combined therapy group than in the serotherapy group, we feel that sulfanilamide did not contribute materially to the effect of serum upon the acute manifestations of the disease.

The literature[6],[7], with few exceptions indicates that sulfanilamide or its derivatives has no effect upon the fever, the rash, the angina, or the toxicity of early acute scarlet fever. Even in those publications where the incidence of complications seemed markedly reduced, the authors state that the drug was without evident effect on the acute symptoms. The adverse effects of sulfanilamide in some patients may even add to the patient's discomfort.[7g]

Prophylaxis of Complications. Since complications constitute a major problem in scarlet fever, the prevention of complications by chemotherapy merits the greatest interest and consideration. The results of our analysis are presented in Table I.

Examination of Table I shows the data for the two groups: serotherapy and serum-sulfanilamide, previously described. The tabulation by age shows two important points: the greater incidence of complications in the younger age sections of both groups and the comparability of the two groups as regards age incidence; 87.5% of cases in the serotherapy group are under 11 years of age compared with 85% in the serum sulfanilamide group. The average day of disease when convalescent serum was administered is 2.8 days in the serum-sulfanilamide group and 3.1 days in the serotherapy group. The table also shows that sulfanilamide was usually started on the second or third day of the disease and continued for an average of 5.9 days. Thus it was usually given all through the acute stage and then continued through several days of normal temperature. Furthermore, the average dose of sulfanilamide is 0.55 grains/lb/day and is larger in the younger age groups where complications are most likely to appear. One hundred and sixty-six of the total of 205 cases in the serum-sulfanilamide group received at least 0.5 grains/lb/day of sulfanilamide. The 39 remaining cases were given 0.375 grains/lb/day and it is interesting that there were only 5 complications in these cases receiving the smaller dose of drug: 3 developed adenitis, 1 otitis media, and 1 a heart murmur. Furthermore, the complication rate (13%) in these 39 cases is less than the general average (22%) of the entire serum-sulfanilamide group. Inclusion of the 39 cases receiving the least sulfanilamide actually lowers the total complication rate in the combined therapy group.

The difference in total numbers of cases in the two groups being compared, makes it necessary to resort to percentages to study the effect of the sulfanilamide. Eighty-three per cent. of the serotherapy group were free from complications during the illness as against 85% of the serum-sulfanilamide group. The complication rates in the two groups are strikingly parallel: thus, for adenitis the figures are respectively 7.7% against 10%; for otitis media, 6.5% and 6.0%; for mastoiditis, 0.6% and 1.5%; for nephritis, 1.6% and 1.5%; for sinusitis, 1.1% and 0.5%; for endocarditis, 0.3% and 0.5%. The total complication rate reflects the same similarity: 20% in the serotherapy group and 22% in the serum-sulfanilamide group. We feel that under the conditions of this study, sulfanilamide-serum treatment was not superior to convalescent serum therapy alone in preventing complications in scarlet fever. The relative incidence of complications in both groups is somewhat lower than was reported previously on a series of cases studied several years ago.[1] This may be accounted for by the fact that larger doses of convalescent serum and earlier administration by the intravenous route is now practiced although the question may be raised that the disease in this region may be somewhat milder than it has been in the past.

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The literature on the use of sulfanilamide in scarlet fever is quite extensive. We did not review certain reports because reference to them in other publications indicated that they consisted of a few case reports or did not include any controls and we felt it would be impossible to evaluate the results. There were other publications[9] which were difficult to evaluate because of incomplete controlled data. We selected publications[10] dealing with sufficient numbers of cases and sufficiently adequate controls which we have summarized and tabulated in Tables 2A and 2B. We noted the country where each study was carried out (since many believe this a matter of importance in appraising results) and the essential data with respect to sulfanilamide. Different forms of sulfanilamide were used by different investigators. The criteria for establishing dosage varied widely in the different publications. In order to form some uniform method for comparison, we attempted to estimate the dosage in terms of grains/lb. body weight/day, using age-weight tables.[8] The drug was employed early and continued for varying periods of time. Under "number of cases" we also have indicated use of antitoxin or human convalescent serum as the case might be. This is a matter of considerable importance, since optional use of horse serum may introduce many variables. Horse serum arthritis and albuminuria are not uncommon, and may be incorrectly interpreted as complications of scarlet fever. The table shows the percent of cervical adenitis, otitis media, and total complications. Finally, the authors' own conclusions are presented.

Table 2A discloses a marked variation between the different reports. It is obvious that one study cannot be compared with another but that test cases treated with sulfanilamide must be compared with controls.

Sako, Dwan and Platou find a striking reduction of complications in the sulfanilamide treated cases. Wesselhoeft and Smith, on the

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10. (a) Sako, Dwan, and Platou 4a. (b) Wesselhoeft and Smith 3a. (c) Peters and Havard 7d. (d) Schwentker and Waghelstein 3b. (e) Hamilton and Togasaki 7g. (f) Benn 7c. (g) Hogarth 6d. (h) Pfaffenbichler, R.: Effects of Prontosil on the Second Stage of Scarlatina, Wein. Klin. Wchnsch. **51**: 1193 (November 4) 1938. (i) Wolff 4b. (j) Strom 7b. (k) Levasheva 7e. (l) Filicheva 7f.

TABLE 2A
EFFECT OF CHEMOTHERAPY UPON THE INCIDENCE OF COMPLICATIONS IN SCARLET FEVER
LARGER DOSE — LIMITED PERIOD OF ADMINISTRATION

Author	Therapy Data				No. of Cases	% No. Compl.	% Complications				Author's Conclusions
		Average Days					Aden-	Otitis			
	Drug	Dose*	Started	Given			itis	Media	Other	Total	
Sako, Dwan & Platou (4a) (U.S.A.)	Sulfanilamide	0.5	early	12	100	92	1	5	2	8	Great value
	———	—	—	—	100	59	9	15	22	46	
Wesselhoeft & Smith (3a) (U.S.A.)	Prontylin	0.5	2.1	2.6	100	34	36	8	76	120	"Has not reduced"
	———	—	—	—	100	28	38	17	74	129	
Peters & Havard (7d) (England)	Proseptasine	0.5	2.3	5	150	66	20	7	29	56	"Some effect"
	———	—	—	—	150 a	49	18	7	36	61	
Schwentker & Waghelstein (3b) (U.S.A.)	Sulfanilamide	0.5	3.3	7.6	110	76	11	6	9	26	"Seems to indicate no therapeutic value"
	———	—	—	—	102	83	9	3	5	17	
	———	—	—	—	109 b	86	4	0	11	15	
Hamilton & Togasaki (7g) (U.S.A.)	Sulfanilamide	0.5	early	9	195	90	?	?	?	11?	"Offers protection . . . equal to convalescent serum"
	———	—	—	—	348 c	86	?	?	?	15.5?	
Benn (7c) (England)	Sulfanilamide	0.5	2.8	12	215 a	85	5	6	8	19	"Lowers the incidence"
	———	—	—	—	195 a	75	7	10	14	31	
Wolf & Levinson (U.S.A.)	Sulfanilamide	0.55	2.8	5.9	205 c	85	10	6	6.5	22	No effect
	———	—	—	—	1279 c	83	7.7	6.5	5.9	20	

* Estimated from authors' data and age-weight tables[8] as grains/day/pound body weight
(a) Antiserum as necessary (b) Antiserum in all cases (c) Convalescent serum to all cases

other hand, find no effect, dismissing the apparent reduction of otitis media from 17% to 8% as a matter of chance. Peters and Havard state that there is some benefit from sulfanilamide, although this does not seem to be borne out by the almost equal figures for adenitis and for otitis media in their control and test groups. The differences favoring the sulfanilamide treated cases are essentially in the incidence of endocarditis, albuminuria, and "rheumatism." In view of the fact that antiserum (horse serum) was administered to 56 of the control cases, serum arthritis and albuminuria may account[3a] for the higher rate of these complications in the control group. Schwentker and Waghelstein's report is of especial interest because they studied two concurrent control series. In the first control series, there was a 3% incidence of otitis media in patients receiving only general care. In the second control group who were treated with antiserum, there was no otitis media. The sulfanilamide treated group of cases had a 6% incidence of otitis media and the highest rate of complications. There is no reason to believe that sulfanilamide is harmful and provokes complications as seems to be shown by these figures, which make clear the need of large groups of cases to warrant conclusive results. These authors stated that within the scope of their study sulfanilamide did not seem to have any therapeutic value in scarlet fever. Hamilton and Togasaki in their brief article express the opinion that sulfanilamide therapy offers protection equal to convalescent serum therapy which is known to reduce complications. In Benn's report, restricted to patients up to age ten, he concludes that there are consistent benefits from the use of sulfanilamide. However, optional use of antiserum (horse serum) in both groups introduces a variable which makes evaluation of this study difficult.

The results analyzed in the foregoing reports differ so markedly, and the conclusions are at such variance that the value of sulfanilamide in preventing complications in scarlet fever remains controversial. It may be worth noting that the two really favorable reports (Sako, Dwan, & Platou,[4c] Benn[7c]) were from those studies in which sulfanilamide was given for the longest period, i.e., 12 days average.

Table 2B presents a series of reports of further interest because small amounts of sulfanilamide were employed, approximately one-half, or even less than one-half, of the customary American dosage. In Hogarth's excellently controlled study the results in the test cases fell approximately midway between his two control series, and he concluded that the drug has no significant effect upon the duration of the initial pyrexia, the initial toxemia, or the incidence of

TABLE 2B
EFFECT OF CHEMOTHERAPY UPON THE INCIDENCE OF COMPLICATIONS IN SCARLET FEVER

Author	Therapy Data				No. of Cases	% No. Compl.	% Complications				Author's Conclusions
	Drug	Dose*	Average Days Started	Given			Adenitis	Otitis Media	Other	Total	
SMALLER DOSE — LIMITED PERIOD OF ADMINISTRATION											
Hogarth (6d) (England)	Proseptasine	0.3	2.4	14	114 b	78	7	4	17	28	"No significant effect"
	———	——	——	——	126 b	78	5	7	11	23	
	———	——	——	——	115	74	8	4	21	33	
Pfaffenbichler (10h) (Germany)	Prontosil	0.3	1	8	150	47	15	7	31	53	"Complications substantially reduced"
	———	——	——	——	150	27	20	11	42	73	
Wolff (4b) (Germany)	Prontosil	0.3	1	10	80	53	30	6	18	54	"No effect"
	Prontosil	0.3	10	10	120	60	33	3	8	44	
	———	——	——	——	77	55	32	4	14	50	
	———	——	——	——	45 b	62	25	4	11	40	
SMALLER DOSE — PROLONGED PERIOD OF ADMINISTRATION											
Strom (7b) (Sweden)	Prontosil red	±0.15	early	42	122 a	62	15	12	23	50	"Reduction of one-third"
	———	——	——	——	122 a	43	21	15	39	75	
Levasheva (7e) (U.S.S.R.)	Streptocide	±0.2	2.5	27	275? a	?	3.3	5	1	?	"Results in lessening complications"
	———	——	——	——	275? a	?	17.5	7.5	6.5	?	
Filicheva (7f) (U.S.S.R.)	Streptocide	±0.2	2.5	22	104	80	5	16	12	33	"Possible value"
	———	——	——	——	146	68	7	18	17	42	

* Estimated as gr./lb./day from authors' data and age-weight tables[6]
(a) Antiserum as necessary (b) Antiserum to all cases

complications. Wolff[4b] likewise finds no effect. Pfaffenbichler's[10h] results, on the other hand, are favorable, and he feels that complications were substantially reduced. Paradoxically, however, he gave sulfanilamide for a shorter period of time (8 days average) than either Hogarth (14 days) or Wolff (10 days).

Finally, there are three reports in table 2B (Strom,[7b] Levasheva,[7e] Filicheva,[7f]) in which very small doses of sulfanilamide were employed throughout the disease and all three authors claim beneficial results. In spite of the seemingly inadequate dosage of sulfanilamide employed, as judged by pharmacologic and other standards, this mode of therapy is perhaps worthy of further study, so that definite conclusions will be possible.

DISCUSSION

It is well known that the action of sulfanilamide ceases shortly after the discontinuance of the drug. Hoyne and Bailey[11] showed that administration of sulfanilamide does not free the patient's throat of hemolytic streptococci. It is likewise well known that complications of scarlet fever may appear at any time during the four weeks of quarantine and even later. These considerations may explain the failure in preventing complications when the drug is administered for only a limited time.

This conception is supported by the more favorable reports associated with the longer period of drug treatment in Table 2A. Sako, Dwan and Platou remark that their results were best in the cases receiving sulfanilamide throughout the disease. The reports of Strom, Levasheva, and Filicheva, in spite of apparently inadequate dosage fit well with this idea.

It is of interest that in three of the studies described above, the authors have attempted to avert complications by administering sulfanilamide later in the course of the disease, i.e., at the period when they felt complications are likely to appear. Hogarth[6d] administered the drug early for seven days and on the sixteenth day of illness resumed treatment for an additional seven days. This method proved unsatisfactory although the small dose employed may have been a factor. Wolff[4b] in one series of cases administered the drug early for ten days and in a later series administered the drug from the eleventh through the twentieth day of illness. Here again the small dose employed may have been a factor in his concluding that unfortunately Prontosil does not lessen the incidence of complications in scarlatina; whether the drug be given early or in the second or third weeks, the development of complications is unaffected. Benn[7c] feeling that the results in his controlled study were favorable, investigated the effects of routine administration of sulfanilamide in the fourth week of illness in addition to early administration. This method of treatment seemed to produce better results and he felt that it warranted further study. However, this second study was uncontrolled and was carried on in the warmer months when scarlet fever is usually milder.

Hoyne's vast experience in scarlet fever makes his opinion noteworthy. He states[12] that "shortly after Prontylin was first available . . . . . Shaw and I treated a series of scarlet fever patients in the Cook County Hospital with Prontylin. The results were disappointing and unsatisfactory."

A recent report[13] by Rhoads and Afremow is of particular interest, although it does not deal with scarlet fever. They employed sulfanilamide in the treatment of hemolytic streptococcic sore throat in nurses and observed no influence either on the acute symptoms or the incidence of complications. They state, "in the average uncomplicated case of tonsillitis or pharyngitis due to hemolytic streptococci the advisability of its routine use is questionable." Moncrieff[14] does not recommend the routine use of sulfanilamide for acute streptococcic pharyngitis in children, although he advises the drug when complications appear.

The exact value of sulfanilamide in scarlet fever might be established by a large controlled

11. Hoyne, A. L., and Bailey, J. H.: The Use of Para-aminobenzene-sulphonamide in the Treatment of Streptococcic Carriers, Arch. Pediat. **54**: 731 (1937).

12. Hoyne, A. L.: Discussion of "Sulfanilamide in Scarlet Fever," Chicago Society of Internal Medicine, January 22, 1940.

13. Rhoads, P. S., and Afremow, M. L.: Sulfanilamide in Treatment of Sore Throat Due to Hemolytic Streptococci. J.A.M.A. **114**: 942 (March 16) 1940.
Sore Throat, J.A.M.A. **114**: 942 (March 16) 1940.

14. Moncrieff, A.: Advances in the Treatment of Disease of Children, Practitioner **143**: 429 (October) 1939.

15. Long, P. H., and Bliss, E. A.: Toxic Manifestations of Sulfanilamide, Ann. Surg. **108**: 808 (November) 1938.

16. French, J. O.: Effects of Sulfanilamide on the Blood in Scarlet Fever, Lancet **2**: 127 (July 15) 1939. Bruun, E.: Action of Streptamide on Leucocytes, Ugesk. f. laeger **100**: 1273 (November 10) 1938.

study in which adequate amounts of the drug are administered throughout the four weeks of illness* as was attempted by Strom with small doses. However, the unpleasant aspect of sulfanilamide reactions from large amounts of the drug over an extended time is a deterrent factor in a study of this kind. It is superfluous to enter into a detailed discussion on this phase of sulfanilamide. Long and Bliss'[15] incidence of 3% hemolytic anemia and Garvin's[5] 4% rash and 10% drug fever are not uncommon experiences. Schwentker and Waghelstein[3b] report a 10% incidence of drug rashes and both French and Bruun[16] report evidence of some injury to the hematopoietic system in scarlet fever patients treated with sulfanilamide. In all the articles which we reviewed, the authors were acutely aware of the possibility of reactions to the drug and used it very cautiously.

The benefit of sulfanilamide either for the acute symptoms or for preventing complications of scarlet fever remains questionable. There is insufficient evidence at present to justify replacing a known therapeutic agent, such as human convalescent serum, with sulfanilamide in treating scarlet fever. Furthermore, since sulfanilamide treatment for a limited period during the acute stage of scarlet fever does not appear to enhance the effect of serum and since administration of the drug is attended by a possibility of unfavorable reactions, one would question the wisdom of routine use of sulfanilamide in scarlet fever even as adjunct therapy.

We wish to emphasize that this study and report does not deal with the active treatment of the complications of scarlet fever. This analysis has been limited to the problem of the value of sulfanilamide given in the early stage of scarlet fever for a limited time in combatting the initial acute symptoms, and preventing subsequent complications of the disease.

CONCLUSIONS

1. Sulfanilamide does not produce amelioration of the initial acute symptoms of scarlet fever.

2. The routine use of sulfanilamide during the first week of the disease, as an adjunct to convalescent serum therapy, did not further decrease the incidence of subsequent complications in our series.

3. A review of the literature indicates, in general, that the routine use of sulfanilamide for a limited time is of questionable value in preventing complications.

4. In view of the controversial opinion on its value, and the possibility of reactions attending its use, sulfanilamide in our opinion should not be used routinely in the treatment of early uncomplicated scarlet fever.

*Such a study appeared after this paper was written. J. O. French (The Sulfanilamide Treatment of Scarlet Fever, Jour. of Hyg. 39: 581, September 1939) observed the course of 170 cases receiving adequate doses of sulfanilamide thruout the four weeks of illness, as compared with 170 controls. Antitoxin was used in both groups. French found 16.9% cervical adenitis in the sulfanilamide group as against 23.4% in the controls, 3.6% otitis media as against 1.8%, and total complication rates of 61.0% and 61.7%. The author concludes that: "The results show that sulphanilamide had no significant effect upon the initial symptoms of scarlet fever, or upon the kind, incidence, or duration of later complications."

CARCINOMA OF THE BLADDER WITH ROENTGEN FILMS OF THE LESIONS BEFORE AND AFTER EXTENSIVE DEEP RADIATION THERAPY

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Illinois State Medical Society, Section on Radiology, Peoria, Illinois, May 21, 1940.

REPORT OF CASE

A white male, 60 years of age, entered the hospital March 2, 1938, with the following history: Burning on urination 4 months, frequency 20 times a day 2 months, nocturia 6 times 2 months, dribbling and pain on urination for 4 months. There was no hematuria.

HIS FAMILY HISTORY: His father died at age of 90. His mother at 63. Cause not known. One brother and three sisters living and well.

HIS PERSONAL HISTORY: included the usual diseases of childhood, moderate habits, no injuries. He was operated on in 1921 for a right inguinal hernia. From that date until the advent of this present complaint four months ago he has enjoyed good health.

Examination by systems revealed an enlarged, soft, smooth prostate. Chest and gastro-intestinal x-ray was negative.

EXCRETORY UROGRAPHY revealed an immediate dye response. K. U. B., was negative for stone. The pelves and calices were distended, the left more than the right. A gradual dilatation of the ureters was noted beginning in the upper third and extending downward until near the bladder and urethral orifice; they were bulbous in appearance. The bladder was the size of a bantam egg and presented a motheaten irregular contour.

ROENTGEN DIAGNOSIS: C. A., of the bladder with ureteral dilatation.

CYSTOGRAM of the bladder revealed practically identical excretory findings i.e., bladder irregularity unchanged, the bladder somewhat larger due to forceful distention. Cystoscopic findings revealed a lesion in the trigone, the entire bladder granular in character.

CYSTOSCOPIC FINDINGS: C. A.

URINALYSIS: Acid, shred of mucus 400 mg. albumin; no sugar; no acetone; no casts; 10-15 red cells per high power field; no pus.

BLOOD COUNT: 5,300,000; hemoglobin 85; white cells 17,800; neutrophiles 86; small and large lymphocytes 11. Wassermann and Kahn negative.

FINAL DIAGNOSIS: C. A., of the bladder.

The patient was referred to Mayo Clinic. Cystoscopic examination and biopsy were made; the pathologic specimen was reported as "Squamous Epithelial C. A. grade 4."

The patient returned to Chicago for subsequent treatment and deep radiation therapy.

RADIATION FACTORS AS FOLLOWS: The patient weighed 145 lbs. Depth in centimeters 21. 200 K.V.P. Thoreaus filtration, M.A. 20. 900 "r" measured in air with backscatter as skin erythema dose, 15x50 cm. and 10x50 cm., fields with 5 ports of entry used, A. P., P. A., bladder, perineum, right and left lateral.

250 "r" were delivered daily except Sunday, each field receiving 750 "r." Total dosage 3750 "r" delivered in 15 days. There was a moderate erythema with resulting bronzing of the skin. There was no radiation sickness, no bladder or bowel irritation. Except for a feeling of tiredness following his daily dosage and for 3 weeks post radiation he had no complaint and carried on his business activities as usual.

TWO MONTHS' POST RADIATION found the burning on urination, frequency and nocturia completely absent.

FIVE MONTHS' POST RADIATION an EXCRETORY UROGRAM revealed an immediate dye response 5 minutes after injection of diodrast. The kidneys, ureters and bladder appear normal. Prostatic enlargement was demonstrable by the pressure defect it exerted on the distended bladder.

In May the patient returned to Mayo Clinic. The cystoscopic examination was reported as revealing a normal bladder.

In December of 1939 the patient again returned to the Clinic where cystoscopic and excretory urography was reported as revealing a normal G. U. tract.

May 17, 1940 *EXCRETORY UROGRAPHY* revealed an immediate dye concentration in both kidneys, ureters and bladder. The serial examination revealed a distended left ureter near the bladder ureteral orifice while the bladder fully distended revealed what appeared to be a wave-like conformity beginning at approximately the left half of the superior portion of the bladder to and beyond the bladder ureteral orifice. My suspicion was aroused least a recurrence was developing in this seeming area of deformity.

CYSTOSCOPIC EXAMINATION revealed a smooth bladder wall, the vessels were not injected. There was a slight intra urethral lobe projection which was assumed to be the result of fibrosis or bladder wall thickening following radiation.

Dr. Vincent O'Conor stated that had he not been acquainted with the past history he would have declared the bladder negative, and knowing the history he was still willing on his cystoscopic findings to declare it so. Dr. O'Conor incidentally was not the consulting urologist since the case was referred to the Mayo Clinic and the courtesy of this examination was through the graciousness of the attending physician and Dr. O'Conor so that this report might be more complete.

I present this case not to impress you with the idea of a cure in the true sense of that word, but to bring to your attention the filtration used, the total "r" units and the result obtained by such filtration and dosage, appreciating the fact that many of us must curtail our ambitions to use filtration and dosage of, shall I say, a more generally accepted standard, but where the skin reactions and sequelae incidental to such methods is by far of greater intensity and where for reasons such reactions must be avoided, this method may be used.

Whether this practice will give as long life as the more intensive deep radiation, remains still to be seen, perhaps with the advent of the fifth year another report can be made. Knowing what I know now of the reaction obtained with this filtration and dosage, I feel that I might have safely given 1,250 "r" additional, i.e., 250 "r" to each of the five areas or a total of 1,000 "r" to each port of entry.

660 Groveland Park.

DIAGNOSIS OF OCCUPATIONAL DISEASES BY THE GENERAL MEDICAL PRACTITIONER

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This is the first of a series of articles on the important subject of Occupational Diseases seen by the general practitioner of Medicine.

The purpose of these articles is to call the attention of the general practitioner to the fact that *many cases of poisoning or disease caused by exposure to harmful substances in industry*

are not correctly diagnosed and treated. This is *because the doctor* consulted *has not taken a really careful and thorough history;* has not inquired into the patient's occupation, or if he has, *has failed to find out to what harmful substances he has been exposed.* Because the occupational history is absent or inadequate the doctor fails to make a really intelligent and complete examination, including laboratory findings, and does not arrive at the correct diagnosis. Having failed to make the corect diagnosis, his treatment must of necessity be incorrect — the proper treatment being, 1. to have him avoid further exposure, and 2. to give the patient the benefit of the latest forms of treatment for the condition from which he is suffering.

Let us just refer to lead poisoning as an example. Lead poisoning is one of the commonest occupational diseases, because the use of lead and its compounds is so widespread in industry. One could easily list a hundred or more industries which are sources of lead poisoning, acute or chronic. The organs and tissues of the body which may be injured by lead circulating in the blood stream include: 1. the blood, 2. the gastro-intestinal tract, 3. the nervous system, 4. the muscles and joints, 5. the heart and blood vessels, 6. the kidneys, and 7. the reproductive system (the germ cells). For this reason the symptoms of lead poisoning, like those of syphilis, may be very diverse and may be referable to almost any organ of the body. Unless lead poisoning is thought of, (and this is most unlikely unless an accurate and complete history is taken, including the occupational history in detail) a particular case may be mistaken for almost any disease known of in medicine. And this has occurred over and over again. Cases of lead poisoning with lead colic have been diagnosed and operated on as cases of acute appendicitis, acute intestinal obstruction, and acute gall bladder disease. Patients with lead encephalitis (inflammation of the brain) have been operated on under the incorrect diagnosis of brain tumor. Recently a patient was sent to and even died in an insane asylum as a case of insanity, having never been diagnosed or treated as a case of lead poisoning. Similar gross and apparently inexcusable mistakes in diagnosis and treatment continually occur in occupational diseases due to many other toxic substances used in industry.

Why do such mistakes occur? The chief reason is because the average general practitioner sees so few cases of industrial or occupational diseases in his practice. Therefore he is likely to fail to think of an industrial or occupational exposure in any particular case.

As was pointed out by R. R. Sayres, M. D., then Senior Surgeon, United States Public Health Service, in a paper, "Health Promotion in Industry" (*Industrial Medicine*, Vol. 7, Number 7, July 1938, pp. 410-415), "According to our last Federal census, there were approximately 49 million people gainfully employed, and all of these should come within the scope of industrial health programs. . . . What makes the problem somewhat more difficult is the fact that the majority of our workers are employed in small units, which at present have no practical means of furnishing adequate industrial health services to their employees. For example, more than eight million persons employed in manufacturing plants alone, approximately half are found in factories with less than 250 workers."

In 1938, Lewis DeBlois, Past President of the National Safety Council, pointed out (*Industrial Safety Survey*, Vol. 14, September-October 1938, No. 5, pp. 133-142) that in 1935 the total number of American industrial establishments was 169,111 and that the total number of wage earners engaged in them was 7,378,854. His figures show that the distribution of all these wage earners is roughly one third each, to establishments employing 0-11, 101-500, and over 500 employees, and that 91.8% of the establishments employ 100 or fewer workers.

Number of Wage Earners employed at Establishment	Total Wage Earners in the group	Per cent. of Total Establishments
100 or under	2,134,916	91.8%
100-500	2,452,211	6.9%
Over 500	2,791,727	1.3%

The 1930 Census of Manufacturers lists 15,333 manufacturing establishments for Illinois with a monthly average of 691,555 wage earners (i.e., exclusive of office, supervisory and other salaried workers). Over 45 per cent. of the wage earners were employed in establishments having 250 wage earners or less, and 59 per cent. in establishments employing 500 or less wage earners. The latest census of Manufacturers, for 1937, does not show the number of wage earners by size of establishment; however, there were approximately the same number of wage earners and it is probable that the relative proportions employed in smaller concerns were very similar

to the proportions noted for the year 1929. The 1930 Census of Manufacturers showed that 91.3 per cent of the plants in Illinois hired 100 or fewer workers, and that 96.6 per cent hired 250 or fewer workers.

Paul A. Neal, surgeon, Chief, Division of Industrial Hygiene, National Institute of Health (Industrial Medicine, Vol. 9, No. 12, December 1940, p. 630) in an article on "Industrial Health and National Defense," points out that "of our workers" . . . "only 15% have full time medical services."

It is very unlikely that any establishment hiring 100 or fewer workers will have a full time industrial physician at the plant, one who can be thoroughly familiar with the materials used and the various processes carried out in the plant, i.e. the manner in which the materials are used.

The American College of Surgeons has established a "Minimum Standard for Medical Services in Industry," and each year publishes a list of "Industrial Establishments Conducting Medical Services Which are Approved by the College." In 1939 (Approval Number, Bulletin of the American College of Surgeons, Vol. 24, No. 5, October 1939, pp. 446-447) the list for Illinois contained the names of only 56 concerns.

In the large plants full time physicians are employed to look after the health of the employees, and these full time industrial physicians are familiar with and think of industrial health hazards and the resulting occupational diseases. However, millions of workers in the smaller plants, when taken ill, call on the family physician or are treated by some general practitioner. Because he sees but few occupational disease cases the general practitioner is likely to be unfamiliar with them, and consequently, likely not even to think of an industrial exposure as the cause of a case that comes to him.

Until recently very few medical schools offered courses in industrial medicine. Consequently few physicians have had adequate instruction concerning occupational diseases. Some medical schools have added such courses to their curricula in the past few years. This should do much to improve the recognition of occupational diseases in the future.

There are a limited number of good reference books on occupational diseases. The encyclopedia "Occupation and Health," published by the International Labor Office,[1] consisting of two large volumes and yearly supplements, is perhaps the most valuable single treatise on the subject.

Valuable pamphlets and other publications are issued from time to time by the United States Department of Public Health and the United States Department of Labor. Bulletin No. 582 of the United States Bureau of Labor Statistics, United States Department of Labor, entitled "Occupational Hazards and Diagnostic Signs,[2]" contains valuable information relative to industrial diseases and their causes. These pamphlets may be obtained by the general practitioner from the agencies listed.

There are a few excellent magazines dealing with industrial medicine, industrial hygiene and toxicology. It is essential that a physician be familiar with the contents of these publications to keep abreast of the rapid advances and changes in the field.

Meanwhile, however, the number of industrial physicians in this country is far below our requirements, as Morris Fishbein, M. D., Editor, Journal American Medical Association, has pointed out. In an article entitled "Industrial Health and the General Practitioner" (Industrial Medicine, Vol. 9, No. 12, December 1940, p. 631) he states that "the American Medical Association has sent a questionnaire to every physician in the country to determine his availabilities for military or other services. More than 175,000 physicians have been queried and more than 120,000 replies are already at hand. It is apparent from the replies that have been received that there are *probably less than 5000 physicians in the entire United States who can qualify as especially competent in the field of industrial medicine. . . . . Only 1,283 physicians* especially qualified in industrial medicine *could be recorded as actually competent in the field.* The important point to emphasize is that *every physician, when taking the history of any patient, should as part of routine questioning, inquire as to the patient's employment,* if he has any, and should inquire in detail as to the nature of the processes in his occupation, the names of the materials handled and how they are used, and the by-products formed. A great many of the substances and materials used in industry

[1]The International Labor Office, Washington Branch, 734 Jackson Place, Washington, D. C., Occupation and Health, Volumes I and II, price $30,00.

[2]Available through Superintendent of Documents, Washington, D. C. — Price five cents.

are given to trade name or number, and often these are all an employee can give as an answer when asked what substances and materials he handles or is exposed too. If the physician is to get the essential facts, he must find out exactly what these substances and materials are. Many of them, known by a trade name or a number are mixtures, often containing more than one toxic substance.

The ordinary physician has not the right of entry into industrial plants. While he might be admitted into some of the plants he would not be admitted into others. And even if he were admitted, he might not be able to obtain the information he requires. The Department of Labor, State of Illinois, has the right of entry into every manufacturing plant in the State. The Industrial Hygiene Unit, Division of Factory Inspection, State of Illinois, Department of Labor, will gladly cooperate with any ethical physician in the State of Illinois and supply this desired information whenever it is requested. It must always be kept in mind, in this connection, that a particular worker in a plant may not be handling harmful materials, or there may be none in the department or occupation in which he is engaged, but nevertheless he may be exposed to poisonous or deleterious materials, dusts, vapors, gases or fumes, from some other department or process in the plant.

Another important point to know and bear in mind is that some of these substances or materials may be carried home on the clothing or skin of the worker and cause disease in other members of the family. Consequently, even in the case of disease of young children, it is important to get an accurate history of such *indirect* occupational exposure. This is particularly important in the case of chlorinated naphthalenes. These waxes are used extensively in plants manufacturing electrical equipment and the like, because these substances afford a very effective water and heat resisting insulating covering. Cases of acneform skin lesions in children from close contact with parents working with such substances are well known.

The general public is little aware of the enormous number of new substances and particularly solvents, that are constantly being introduced in industry. A relatively non-toxic substance may be dropped from use because it presents a dangerous fire hazard, and in its place a new substance be used that has no fire hazard. This newly substituted substance may, however, present some other danger, some health hazard which at first may be unknown to the management, the workers and industrial physicians alike. Workers may die from an illness that neither they nor the industrial physicians who treat them attribute to their industrial work.

OCCUPATIONAL DISEASES	O. D. FILES						DISABLEMENT REPORTS	PERCENTAGE OF ALL CLAIMS PAID OR TO BE PAID
	ARBITRATIONS				SETTLEMENTS		VOLUNTARY AGREEMENTS	
	Total Number	Voluntary Dismissals	Dismissals	Denials	Awards Given		Total Number	
SILICOSIS	62	11	8	4	1	38	2	41	8.7%
SILICOSIS-TB	25	2	4	1	2	16	0	18	3.8%
TUBERCULOSIS	42	7	4	13	3	17	0	20	4.2%
MISC. PULMONARY	84	12	9	26	2	36	3	41	8.7%
LEAD POISONING	88	4	3	7	16	60	125	201	42.4%
NON-LEAD METAL POISONING	2	1	0	0	0	1	1	2	0.4%
CHEMICAL POISONING	11	0	1	2	0	8	3	11	2.3%
DERMATITIS	44	6	2	1	5	30	72	107	22.5%
MUSCLE, BONE NERVE ILLS	17	3	1	1	1	11	3	15	3.2%
GERM DISEASES	5	3	1	0	0	1	0	1	0.2%
MISCELLANEOUS	28	6	2	8	0	12	5	17	3.6%
TOTALS: ALL DISEASES	408	55	35	63	30	230	214	474	100%

The manifestations may closely resemble symptoms of non-industrial disease. The true cause of the ailment in these cases may be ascertained only after several workers have died and autopsies have been performed, the occupational and clinical histories have been analysed by some competent industrial physician, and animal experiments have been carried out.

The average general medical practitioner usually is unacquainted with actual working conditions and even the common exposures in the various industries. Where new toxic substances are used he could not be expected to recognize the casual relationship between the use of such a substance and some puzzling ailment. There are literally hundreds of new solvents alone.

In order that the general practitioner may have some idea of the relative frequency of the various Occupational Diseases that cause disability and lost time to workers in Illinois, the following table is presented. This shows the total number and relative percentages of all of the occupational diseases for which disability claims were filed with, and awards were given by the Illinois Industrial Commission, or were settled otherwise, either by insurance companies or by the employers, during the first two years of operation of the Illinois Occupational Disease Act of 1936.

The table is a summary of all Arbitration Awards and Settlements made in cases of claims filed prior to November 1, 1938, the records of which were in the Occupational Disease Files of the Industrial Commission, available for classification and verification as of January 1, 1939.

The above list of cases probably does not at all represent the number of individuals who suffered from or were disabled by occupational diseases in Illinois during this period. Undoubtedly many were mis-diagnosed or failed to file a claim.

The relative incidence of the various occupational diseases listed varies from year to year in every State, depending on many factors. For example, in several States, during this same period, Dermatitis accounted for some 60 to 65% of all occupational diseases for which disability was paid, whereas in Illinois it accounted for only 22.5%. In Illinois, again, its incidence varies greatly from year to year.

Since 1937 the number of *Lead Poisoning claims*, both the total number and the relative number, has been steadily *decreasing*, year by year. This is shown in the following table.

OCCUPATIONAL LEAD POISONING CASES REPORTED IN 1937, 1938 and 1939

Occupational Disease Cases	1939	1938	1937
Total Number Reported — All types	470	393	539
Number of Lead Poisoning Cases	52	70	231
Per Cent. Lead Poisoning Cases	11.1%	17.8%	42.9%

The number of *Dermatitis claims*, on the other hand, has been *increasing*. For example, 361 or 41.8 per cent. of the 863 compensable occupational disease cases reported in Illinois during the years 1938 and 1939 were for skin diseases caused by irritants.

The total number of skin disease cases caused by irritants reported in 1937 was 163, in 1938 was 176 and in 1939 was 185.

Among some of the common disabling occupational diseases, a few of the more interesting and important for the general practitioner to be familiar with, are as follows:

Lead poisoning
Dermatitis
Silicosis
Poisoning from Benzol and Benzene Derivatives
Poisoning from Chlorinated Naphthalens and Chlorinated Diphenyls
Poisoning from Trichlorethylene
Poisoning from Carbon Tetrachloride

The articles to follow will deal with these subjects and it will be the aim to present briefly such facts as to render it possible for a general practitioner of medicine, without any industrial experience, to recognize the industrial occupational relationship of the cause and to understand the condition, when such a case comes under his care.

CARDIAC PAIN — CLINICAL INTERPRETATION

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As practising physicians we all encounter cases of cardiac pain and at times we have difficulty in the proper classification of this pain. In fact, there are six categories of thoracic pain for which the heart and great vessels are responsible.

Read before the meeting of the Chicago Heart Association at the Cook County Hospital on March 29, 1940.

1. Precordial aching or heart ache, and short, sharp stabs of pain.

These pains are due to hypersensitiveness of the nervous system from fatigue and occur usually in functional conditions such as effort syndrome, etc. If the ache is present in heart disease it is interpreted only as a complication and not due to heart disease. The pathogenesis is usually due to a thumping of the heart, whether normal or diseased, against an over-sensitive thoracic wall. Short stabs of pain are often caused by extra systoles.

As an example of the above we can cite the following types of cases: —

CASE I. A.S., male, aged 49, business man, has always carried a blood pressure around 160-180. His cardiac reserve was normal and he showed none of the clinical manifestations of cardiac failure. One evening while sitting in a movie theatre, he experienced a sudden short stab of pain in the precordium. He claimed he felt weak and immediately went to his doctor, who made a diagnosis of acute coronary thrombosis, and kept him in bed for six weeks with a very uneventful recovery. A review of his case later showed no signs, clinically or electrocardiographically of coronary disease. However, he did show an occasional ventricular extra systole. The diagnosis was changed to hypertension and ventricular extra systoles. He has remained well for over two years.

CASE II. Mrs. Smith, aged 36, has complained for a number of months of precordial aching, which was fairly constant. She was very apprehensive and claimed that she was somewhat dyspneic on exertion. Physical examination, electrocardiogram, and fluoroscopy revealed no abnormal findings. She had a number of tender areas over the precordium. A diagnosis of neurosis or neurocirculatory asthenia was made. Relief was obtained by infiltration of the subcutaneous tissue with 2% novocain solution.

CASE III. S.G., aged 39, male, has been a moderate hypertensive for a few years. In the last three months, he has also complained of more or less precordial aching. His physical examination showed the signs of a compensated hypertensive heart. The electrocardiogram simply showed a left ventricular preponderance with a negative T1, which was due to the hypertension. He also had multiple tender points on direct palpation over the precordium. A diagnosis of hypertensive heart disease (compensated) and neurocirculatory asthenia was made. He was assured that he did not have coronary disease. His future course for the ensuing year was uneventful.

The second type of pain that we encounter is:

II. Anginal pain or angina pectoris; the pain here being dependent on insufficiency of the coronary circulation. The symptoms are well understood by all, so that the clinical description can be omitted here. One knows that the pain may be brought on by exertion, excitement, or the eating of a heavy meal, and in severe cases the pain may come on at any time, day or night. It has been a common clinical observation to see anginal syndromes in severe anemias; primary, such as pernicious anemia, and secondary anemias; in thyroid disturbances, such as hypo or hyperthyroid states; in luetic heart involvement, and in the paroxysmal tachycardias. I have recently heard of a case of angina pectoris which was due to partial thrombosis of the left subclavian artery. One knows that the radiation of the pain may be in other places than down the left or right arms (ulnar distribution) of the fingers; and that the pain may radiate to the neck, face, back, ear, subclavicular region, and epigastrium. It is also well known that the pain may be diverted from its normal course by a superimposed arthritis, infected tooth, ear, etc. Other conditions which might be confused with the anginal syndrome are: left sided arthritis of the shoulder, subdeltoid bursitis (left shoulder), neuralgia of the brachial plexus, cardiospasm, herpes zoster, and spondylitis of the lower cervical and upper thoracic vertebrae.

CASE I. S.B., aged 48, male, had typical anginal pains for a year, which radiated down his left arm to the fingers (ulnar distribution). One day he developed a severe toothache, and in his excitement, which precipitated an anginal attack, the pain radiated to his tooth. We hear of referred pain to the ear with an otitis media, etc.

CASE II. Mrs. C., aged 36, was suddenly taken with a severe precordial pain and faintness, lasting two hours. She felt as if she were going to die. Her doctor made a diagnosis of acute coronary thrombosis, and proceeded to treat her accordingly. Examination then showed a very rapid heart rate of 190 which responded immediately to right carotid sinus pressure. The diagnosis of paroxysmal auricular tachycardia was made in place of that of coronary disease.

CASE III. Mr. P., aged 52, complained of precordial pain only after eating his heavy meal for the last three or four months. He had no anginal syndrome with effort or excitement. He complained of a slight selective dyspepsia. He had no dyspnea or palpitation. Physical examination, fluoroscopy, and electro-cardiogram were normal. A gallbladder visualization showed poor concentration of the dye. A diagnosis of gastrocardiac reflex was made, and proper therapy instituted for his gallbladder, with frequent light diet. He has had no cardiac complaints now for the last six months.

It is well known in medicine that the only two heart conditions associated with pain and collapse are due to acute coronary thrombosis and pulmonary embolism. In all too many cases of severe precordial pain do we make the diagnosis of coronary, and seldom that of pulmonary embolism. We all realize that there is a typical electrocardiogram of coronary disease, though most of us forget that at times we can get a picture which is fairly typical of pulmonary embolism. We know practically that most pulmonary emboli originate in the deep veins of the leg and pelvis, and that it may come occasionally from the right heart, or even the left, as a paradoxical embolus due to a patent foramen ovale. There are many pathological conditions which simulate coronary disease very closely. Chief among these are the hypertensive crisis, pneumonia, spontaneous pneumothorax, diaphragmatic hernia, epidemic pleurodynia, dissecting aortic aneurysm, acute fibrinous pleuritis, periarteritis nodosa of the coronary artery, and acute abdominal conditions.

CASE. One of the conditions which may be confused with acute coronary thrombosis is that of hypertensive crisis. An example of the above is the report of the following case:

J.S., male, aged 49, has carried a hypertension of 160-180 systolic for over a year. He showed the usual findings of hypertension, with a left ventricular preponderance and a negative T1 in his electrocardiogram. One night he was awakened from his sleep with a very severe precordial pain lasting two hours. His blood pressure taken during his attack was 240/120 — a rise of 60 points over his usual hypertension. The next day he felt well. His cardiogram showed no findings indicative of a coronary thrombosis. A diagnosis of hypertensive crisis was made.

Other causes of cardiac pain that one sees in the active practice of medicine are: (1) the pain associated with pericarditis, (2) the pain in an acute rheumatic carditis (this pain may last for a few days in a severe rheumatic infection) (3) we are all acquainted with the pressure pain in an aortic aneurysm, and a few of us have seen (4) the severe, excruciating, tearing pain in a dissecting aortic aneurism.

Thus one can see that there are numerous pathological conditions that can cause cardiac pain, and that in the proper analysis and interpretation a correct diagnosis of the causation of the pain can be made. Quite a number of cases are diagnosed as acute coronary thrombosis or angina pectoris, when as a matter of fact, some other condition is present. It seems that the easiest way out of a diagnostic difficulty associated with the symptom of cardiac pain, is that of a coronary or anginal condition. One hopes that this may give a clue to some of the other pathological conditions associated with cardiac pain.

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CARE OF THE FEET OF NORMAL CHILDREN

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For the purpose of this paper, no attempt will be made to enter into any technical argument as to just what constitutes a normal child or a normal foot. Obviously it is impossible to set a rigid standard for any physiological structure, and any attempt to narrow the definition results in mildly interesting but relatively unimportant verbiage. Several excellent books and papers have appeared recently with comprehensive reviews of the anatomy and the function of the foot. And while differences in opinion exist and are expounded convincingly, fundamentally the foot remains as one of the principal elements of locomotion. Bearing all the weight of the body, made up of a complex series of bones, joints, muscles and ligaments, it is subjected to terrific stresses which must be met at unexpected as well as at expected times. It would more than tax the ingenuity of a structural engineer to design as excellent a piece of machinery to serve its function. Yet there is no part of the body which is more neglected or more abused than the human foot. The lay person looks on the average foot as an unsightly appendage and for thousands of years the appearance of the foot has been subjected to alterations by almost constant binding or strapping or by forcing it into ill-fitting coverings. The female of the species has not been alone in this attempt to improve upon nature's handiwork for, in the Middle Ages in particular, the men assumed their natural role of peacocks and some of the male footwear of that period would put to shame many of the female creations of today.

Now we are in the age of camouflage in footwear and, while it is true that at this cycle the

Read before Section on Surgery, Illinois State Medical Society, May 22, 1940, Peoria.

male footwear is in general satisfactory, the female footwear perpetrates atrocities which only the hardiest can endure without hobbling or tripping along as though on stilts. Under bridge tables, under the seats of movie theaters, under park benches rest hundreds of shoes while their owners seek a few moments of relief by permitting their feet to escape from the leather and cloth vises, and cautiously they wiggle their toes like birds with broken wings testing the appendages to see if the function is yet intact. Woe to the lady whose feet have reached the limit of endurance and like swollen flood rivers can no longer be confined to the barriers. Then she must beat an ignominious retreat, paddling along in her stockinged feet and carrying the offending shoes in her hands. Such circumstances are far from uncommon. One wonders what diabolical pleasure the designers of women's style shoes derive from their creations. It might well be considered a sadistic tendency were it not for the evolutionary cycle which such creations go through and the hope that eventually either reason or necessity will prevail.

The medical profession as a whole has shirked its responsibility in the care of the feet and has graciously presented the care of one of the most important structures of the body to ill-trained or commercial interests. It may well be considered a reflection on our profession that we either consider it beneath our dignity to care for ordinary ailments of the feet or that we retreat from the difficult situations which arise in treating structures that combine both social and anatomical complications. Yet we bravely assume our natural dictatorship over other structures which combine such elements to much greater degrees. The foot is, of course, only a part of the lower extremity and that of the rest of the body. To try and isolate the foot and its function from the entire body is a grievous error which is often indulged in by amateur shoe salesmen and others not thoroughly versed in comprehensive human anatomy. Quite often we see pitiful attempts made to adapt footwear or other prosthetic appliances to a deformed foot which is in itself secondary to trouble elsewhere, which if properly treated, greatly enhances our opportunities of permanently benefiting the patient. Cases of residual infantile paralysis with marked deformity of the entire extremity, congenital dislocation of the hip, cerebral palsy and many other such troubles are often harmed by well-meaning but uninformed persons attempting to treat the foot as the primary source of the disturbance. All cases of foot disturbances should be thoroughly examined by trained physicians and surgeons with the idea of treating the deformities in all their ramifications.

While it is true that the Chinese realized that in order to change the size of the human foot it was necessary to start altering the foot of the baby, it is also true that in order to properly protect the natural growth of the foot it is necessary to guard the infant's and growing child's foot against dangerous influences. This paper is not directed toward the treatment of foot deformities, but one cannot refuse an opportunity of cautioning the medical profession against delay in treating foot deformities of infants. The old idea of permitting babies with clubfoot deformities to wait at least one year before having treatment started deprived that baby of the most valuable year in which satisfactory correction could be obtained. The time to start treating such cases is as soon as you see them. The first year of life offers much more hope of correction of a clubfoot deformity than any subsequent five-year period. Nor should such deformities be considered lightly. No single orthopedic deformity presents more difficulties than an advanced clubfoot. Even after primary correction has been obtained, constant observation must be maintained for subsequent relapse is common. All foot deformities of infants or children should be studied carefully and corrective measures instituted immediately. The old idea that the child will outgrow many foot deformities is not only dangerous but pernicious. Most foot deformities tend to become worse as growth progresses and the only safe way of handling such events is by skilled treatment and observation.

There are, of course, variations from any standard form of any anatomical structure all of which may be considered normal. Some babies' feet are long and narrow, others short and fat. In some the front part of the foot tends to turn in, in others a more or less straight line is present. Provided that the weight-bearing lines extend along the recognized physiological points and that unusual rigidity or unusual relaxation is not present, that all the ordinary appendages are present and in usual relationship, the feet may be considered normal. Even at birth, defi-

nite bony and cartilaginous structures may be felt and the relationships observed. As the baby grows the pudgy appearance and feel of the foot changes and bony prominences become evident. The toes spread apart, the heel becomes more recognizable and definite longitudinal arching of the inner side of the foot is observable by sight. Such definite arching was present at birth but could only be observed by palpation. As the child develops, the heel continues to become more definite, the longitudinal arch more marked and the lateral spreading of the forefoot in relation to the heel more pronounced. The toes continue to be well spread apart when the child walks; weight is borne on the heel, the outer side of the foot, across the anterior arch and across the heads of the first and second metatarsal bones. Of course, weight is actually borne on all the structures, but the above mentioned structures show most of the external evidences of weight bearing and serve as criteria for observation. Feet which show unusual rigidity, unusual relaxation, unusual lines of weight bearing or faulty positions cannot be considered normal and reserve special attention.

How can we preserve the normal foot and encourage its development as a first class useful structure? More and more we are being consulted by mothers who do not believe there is anything wrong with their children's feet but who are wholly confused by the contradictory advice as promulgated by magazine articles and competing shoe salesmen. Any observer can choose a group of women's or children's magazines and find contradictory advice by so-called eminent authorities. Recently one such article told of the dangers of permitting a baby to wear soft shoes — the shoes must be hard-soled with adequate support for the tiny, soft structures. Another equally popular magazine carried an article warning of the dangers of the supporting shoe on babies since it weakened the foot by its support and did not permit the muscles to get proper exercise. Most confused of all is the parent who commits the error of going into two stores specializing in children's shoes and hearing the competitors outline the disastrous results which will ensue if the other's wares are purchased. What can we tell the parents of the child with relatively normal feet? Should we advise full shoes, oxfords, hard soles, arch support features, round toes, moccasins, rubber-soled shoes or what?

A few simple rules based on common sense, anatomical and physiological sense and observation may be of profound value. As Alexander Pope wrote,

> "'Tis education forms the common mind;
> Just as the twig is bent the tree's inclined."

This is of practical value here for, as we can alter the form of adult feet by confining the infant foot, so can we permit the normal foot to develop properly by restraining its development as little as possible. What excuse is there for immediately putting full hard-soled shoes on babies? What protection do the normally developed structures need? The baby starting to walk seldom pounds on hard floors, but on rugs and pads in the play pen. It is doubtful if hard floors would be injurious at any rate. The finely balanced mechanism of the foot needs unconfined exercise in order to develop the intricate network of muscles and strengthen the ligaments. Going barefoot or with socks or booties or moccasins is the best method of permitting foot development.

When should real shoes be put on? Climate permitting, real shoes should be worn only when the neighbors become too persistent about the mistreatment of the child. We are living in a social environment and must subscribe to the minimum of its dictates. So shoes must be worn. These should be as soft and flexible as possible — oxfords preferred. Permit as much muscle play as possible. The least heel available the better. The idea that girls need more height of the heel than boys is another superstition with no foundation whatever. Not so many years ago, the reverse was believed to be true and boys' heels were higher than girls'. Keep the heels as close to the earth as possible. Shoes should be cut full and plenty of toe room available. If the edge of the oxford gaps across the instep or under the lateral malleolus, it is of little consequence. The size of shoes should be changed frequently as the child grows.

Under no circumstances should shoes be fitted with an effort made to keep the foot from spreading. The normal foot should grow to its normal size and shape and no effort of molding made. As soon as we tamper with the architecture of the normal foot by attempting to limit its growth in any direction we are courting trouble. Stay

away from arch supporting features unless the feet are abnormal. Rigid arch supports do weaken normal feet and prevent proper muscular, bony and ligamentous development and result in *weak feet. Permit the child to go barefoot if* conditions are satisfactory. The price of shoes is *no indication whatever of their value to the feet.* More expensive shoes often are made of heavy leather and are too rigid. The shoe should accommodate itself to the foot, not the foot to the shoe. "Hand-me-downs" are often doubly expensive in the long run. It is much safer to buy a pair of cheap properly fitted shoes. Err on the *side of having the shoes too large rather than* too small. If the shoes are the correct fit, it makes no difference whether the soles are of leather, rubber or composition, or whether they are perforated or solid. Light perforated shoes or sandals are certainly more comfortable in hot weather.

In conclusion, use "shoe sense" for "horse sense." We never think of making any normal *structure stronger by restricting its function.* Exercise must be available for proper development and shoes built like plaster casts will weaken and not strengthen feet.

SUMMARY:

1. Normal feet of children should not be restricted by stiff shoes.

2. Low, flat heels or no heels at all on shoes are desirable for both boys and girls.

3. The normal foot is benefited by barefoot exercise.

4. Any deviations from the normal should be studied and treated by skilled physicians and surgeons.

5. Feet cannot be considered separate parts of the body but must be viewed as important elements of the entire human mechanism.

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DISCUSSION

Walter R. Fischer, Chicago: The contents of Dr. Sofield's paper are exactly right and I for one highly appreciate the fact that he has brought this subject about normal feet before the Society. I have no criticism to offer on Dr. Sofield's paper. The items presented have been plain and true. Nevertheless I would like very much to take this opportunity to add a thought or two on the subject. The importance of proper management for the growing feet of a normal child cannot be overestimated. Such management begins at the hour of birth by a comprehensive examination by the attending obstetrician. It is at this point and no later than the normal should be differentiated from the abnormal and the avenues for obtaining proper advice in either instance explained clearly to the parents. Next, the little infant pronounced perfect *at birth must soon face the hazards of the many in*fluences that appear to disturb the natural development *such as injury, disease, rapid growth and in*crease in weight, all of which cast their specific affects upon the burden bearing feet. The proper time for parents to obtain information from the physician about the child's foot is not at the appearance of limp, pain or distortion, for these symptoms too often represent an advanced stage of a process that has been going on for some time and that should have been recognized or prevented at a much earlier date. Therefore another additional factor of importance in the management of normal growing feet is a program for the parents to follow presented by the physician, the competent authority on all foot matters. This program should include routine examination of the feet at stated intervals by a physician *interested in feet. Dr. Sofield made his mildest state*ment when he mentioned the fact about the medical profesion shirking its duty in the care of the feet. By virtue of the physician's broad medical background, foot problems whether they concern cure or prevention are always physicians problems. It is my most sincere desire to see Illinois physicians lead in the adoption of some logical plan for the observation and management of the growing feet of normal children.

COCCYGODYNIA: ITS DIAGNOSIS AND TREATMENT

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The diagnosis of coccygodynia can be established only by a careful history, minute physical examination and roentgenography. By such a diligent search most of the painful conditions in this region will be eliminated as not true coccygodynia.

Digital manipulation, the index finger in rectum and the thumb outside, will reveal the position, mobility and tenderness of the coccyx. Passive motion should produce the pain of coccygodynia. The pain is usually present during defecation or urination or when sitting, but its character is variable. The patient generally rests on one buttock, with the other one elevated to remove pressure from the coccyx.

Coccygodynia is to be thought of in every patient presenting anal or sacral pain, but because of the more common lesions of the rectum and other pelvic organs this condition frequently

goes unrecognized or is improperly treated for some other affection.

Anal or rectal lesions, such as ulcer, hemorrhoids, proctitis, fissure, cryptitis, fistula, foreign bodies in the rectum, or scars of previous operations, may induce suffering which simulates coccygodynia by involvement of the nerves controlling spasms of these anorectal and perineal muscles.

Pilonidal cyst is the most common lesion from which a painful coccyx is to be distinguished. There is usually a dimpling of the skin in a cyst, and when infected the cyst will have a discharging sinus. There is little or no pain occasioned by the rectal examination of a pilonidal cyst because it is dorsal (posterior) to the sacrum.

The close resemblance in clinical history of coccygodynia to vaginismus is to be thought of in some cases. In each condition there is an involuntary spasm of a group of muscles some of which are attached to the coccyx or to the fibrous central point of the perineum. There need be no real hyperesthesia of the parts, but there is a different sensation in the skin around the genitals, perineum and anus from that of the skin elsewhere on the body and tactile sensations coming from this region supply a different cerebral stimulation and the deeper structures, pelvic fascias and perineal muscles are sensed differently from the same types of tissue elsewhere. Movement of the perineal muscles are felt differently from movement of the muscles of the arm. Vaginismus is an involuntary spasm of the sphincter cunni and other muscles of the pelvic floor by attempts at coitus or digital examination. There is present usually no real hyperesthesia of the parts, the muscular spasm being the result of a mental reflex.

Masturbation, either manual or through voluntary setting of the muscles about the perineum and thighs may be a counterpart of coccygodynia. Hamill reported a case of this character.

In studying the type of cases it is to be remembered that the feeling tone of the sexual organism is a muscular spasm. If this spasm of muscles is rightly timed and coordinated the organism is a voluptuous sensation, but if it is premature or improperly conditioned, the result may be a painful cramp-like contraction of the muscles of the perineum, at least those that are concerned in the essentials of copulation. In any of the purely neurotic subjects the psychic reflex is maintained by the constant subjective discomfort of the perineum and coccygeal nerves.

The rectal crises of tabes must be carefully differentiated and as these belong to the prodromal and preataxic stages of this disease their recognition may be most difficult. The pain of tabes is a stabbing or boring sensation, shooting through the perineum or down the legs and lasting for a brief interval of time. Martin has described a peculiar loss of tone and muscle sense of the rectal sphincters. There is also diminished sensation of the areas of the skin about the anus from the coccyx to the scrotum or vulva. A sense of fullness in the rectum as of incomplete defecation or a frequent passage of a small amount of feces are often mentioned and may be mistaken for dysentery, but are in reality the effects of the anal tenesmus.

Lesions of the conus medullaris, that portion of the cord extending from the filum terminale to and including the third sacral segment are characterized by paralysis of the sphincters of the bladder and rectum and with loss of sexual powers. There is also a saddle-shaped area of anesthesia involving the skin about the anus, perineum, scrotum, penis and the mucous membrane of the urethra and anus.

As the spinal cord terminates at the second lumbar vertebra, tumors or injuries below this point produce nerve symptoms only in so far as they compress or destroy the lumbar or sacral roots (cauda equina). If partial, there results paralysis of the groups of muscles and circumscribed areas of anesthesia with radiating pain in the course of the affected roots. Thus there may be lancinating pain in the anal and rectal canals or there may be rectal incontinence. In an exceptional case there may be isolated paralysis of the bladder or rectum. Besides tumors in the membranes of the cord or on the nerve roots, fractures or spina bifida may produce these same symptoms. Arthritis, nontraumatic, is to be excluded. Cauda equina may cause pain referred to the coccyx, with sensory anesthesia and paralysis which may be flaccid or spastic. Childbirth injuries play a very minor role.

PROGNOSIS

The prognosis of coccygodynia, whether it be symptomatic or true disease, should always be kept in reserve. Duncan[1] studied 278 patients

of whom 97 per cent. were females; 89 per cent. recalled injury to the coccyx.

Only 54 patients were followed up, but of these 97 per cent. obtained relief within six months. 11 per cent. had operative resection with complete relief in 74 per cent., partial relief in 9 per cent., no relief in 17 per cent.

TREATMENT

Manipulation of the coccyx is a recognized procedure and is beneficial in certain cases of arthritis, adhesions and displacement. Hobart[3] anesthetizes his patient with nitrous oxide, places him on his abdomen, and with his index finger within the rectum and thumb externally over the coccyx manipulates the bone forward and backward. This procedure loosens the adhesions and relieves congestion about the nerve plexus. Milder massages, without an anesthetic, are given every two or three days until all pain has disappeared.

In other cases the prolonged application of heat by means of the rectal douche or the Elliot machine is of much value. Each day our patient is given a hot rectal douche at 105 degrees F. for ten minutes, and this is followed by a hot sitz bath at 110 degrees for thirty minutes. Some patients feel faint when taking this hot sitz bath and we have substituted the hot pelvic pack.

For the hot pelvic pack a comfortable couch has a woolen blanket spread out on it in such a way that when the patient lies down upon it the sacrum will rest in the center of the sheet each way. Another woolen blanket is folded diagonally, like a napkin bandage, and laid across the table with the apex pointing down and the base at such a point that as the patient rests upon it, the upper edge of this blanket will be two inches above the umbilicus but well within the upper limit of the under blanket. Another woolen blanket somewhat smaller is also folded or cut cornerwise and wrung as dry as possible out of water at 160 degrees F., and laid over the first triangular sheet. The patient now lies upon the couch face upward, and in such a position that the upper border of the wet sheet will be at about the level of the umbilicus. The legs are drawn up and the knees widely spread. The apex of the wet sheet is now drawn up until it fits the perineum tightly, the apex resting upon the sternum, the sides being spread out over the abdomen as much as possible. The legs are now extended, and the lateral triangles of the wet sheet are brought over one by one and wrapped about the thighs in such a way that the skin of the abdomen, hips, thighs and perineum is everywhere covered with the sheet. The apex of the triangle is now turned down over the abdomen.

The outer dry triangle sheet is now adjusted in the same way. The patient is then wrapped in the large woolen blanket first spread upon the couch. The patient's head being protected with a cool compress, now rests in these wrappings for twenty minutes. This pack is changed for a second and perhaps a third application.

Each night the therapeutic lamp is applied over the coccyx for an hour.

This treatment exercises a powerful revulsive effect upon the pelvic viscera and stimulates the sympathetic nerves of these parts and is a most valuable analgesic measure.

The mental attitude of the patient is a matter of great import and may require the help of a psychotherapeutist. A change in the emotional status, a feeling of contentment rather than of despondency helps much. Also, when definite, even though slow, improvement rewards our treatment we must constrain our patients to bear with us and not discontinue our treatment too early.

EXCISION OF THE COCCYX

If patients do not obtain relief by diligent trial of physiotherapy, the coccyx must be excised.

The patient is placed on his abdomen with the foot of the table lowered. Caudal or low spinal anesthesia is used. The operative field is prepared with tincture of iodine, the excess being removed with alcohol. The sacrococcygeal articulation is determined and also the tip of the coccyx. It is not usually necessary to insert the finger into the rectum. A midline incision begins just above the sacrococcygeal articulation and extends vertically downward to below the tip of the coccyx. The skin and fascia are divided to the bone. Its posterior surface and lateral borders are well exposed. It is then disarticulated by severing it from the sacrum and beginning at its upper end it is lifted out. As the coccyx is drawn backward, its anterior surface is freed from above downward being

careful to avoid injuring the rectum. The exposed end of the sacrum may need to be smoothed off with a rongeur or a curette. The lateral sacral arteries may need to be ligated separately. When the bleeding is thoroughly controlled, the incised muscles are sutured together separately and deeply with interrupted chromic catgut. The skin is closed with dermal sutures. The wound is covered with a collodion dressing.

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2. Hobart, M. H.; Manipulative Treatment of Coccygodynia, Surg. Clin. N. Amer. 579, 1937.

58 East Washington Street

VITAMIN E FOUND MUSCLE, NERVE AID

LONDON—Vitamin E, known as the fertility vitamin from wheat germ, is being hailed in medical circles here as a probable cure for hitherto hopeless diseases of muscle weakness and nerve degeneration.

It is also seen as a possible means of protecting children against infantile paralysis and adults against locomotor ataxia.

Striking results in treating more than a score of human patients suffering from incurable and even fatal muscle weakness and nerve degenerative diseases with vitamin E are reported by Dr. Franklin Bicknell, honorary physician to the Farringdon Dispensary here, in the medical journal, *The Lancet.*

The vitamin should also be used to protect children against infantile paralysis, at least during epidemics, Dr. Bicknell declares, though his report does not include such use of the treatment.

FIND NEW TYPE PNEUMOCOCCUS

NEW YORK—Discovery of a new kind of pneumonia germ, responsible for more illness than some of the other types, and development of a serum for detecting its presence and treating its victims are announced here by the New York Department of Health and Lederle Laboratories, Inc.

The germ is called pneumococcus Type 33. Hitherto scientists have recognized 32 types of pneumonia germs, following the classification by the late Dr. Georgia M. Cooper of the New York City Department of Health.

The newest one, Type 33, was isolated by Dr. Jesse G. M. Bullowa, of Harlem Hospital's pneumonia service, and was at first called the Wilder strain. Numerous specialists during the pneumonia season of 1937-1938 reported that they were encountering pneumonia in their patients which, though the germs seemed to be related to Type 9 pneumococci, did not respond to treatment with Type 9 pneumonia serum treatment.

Serum for diagnosis and treatment of this type of pneumonia infection has been prepared by Lederle Laboratories, and reports since it has been in use show that it is a more frequent causative agent of pneumonia than some of the established higher types.

BELLADONNA GIVES HOPE TO VICTIMS OF ENCEPHALITIS

CINCINNATI—Hope for recovery of patients disabled by the tragic after-effects of an attack of encephalitis appears in the report of good results an American physician, Dr. Howard D. Fabing of this city, has had with a medical treatment imported from Bulgaria via Italy.

While the new medical treatment cannot be called a cure, 22 out of 23 totally incapacitated patients were helped by it, nine of them showing marked improvement, Dr. Fabing reported to the Ohio State Medical Association. The rigid muscles, mask-like faces and peculiar gait are the after-effects chiefly helped by the treatment. The patients feel better, but the mental symptoms are not always relieved.

The medicine used is a white wine extract of the Bulgarian belladonna plant. This medical treatment was first promulgated by a Bulgarian herbalist, Ivan Raeff, of Chipka. Clinics for giving this treatment were established throughout Italy by Queen Elena. More recently, English and American physicians have tried the treatment with good results.

SUPERIOR

Little Nelly told little Anita what she termed a "little fib."

Anita: A fib is the same as a story, and a story is the same as a lie.

Nelly: No, it's not.

Anita: Yes, it is, because my father said so, and my father is a professor at the university.

Nelly: I don't care if he is. My father is a real estate man and he knows more about lying than your father does.—*United Presbyterian.*

SULFANILAMIDE DERIVATIVES FOR FURUNCLES, CARBUNCLES AND ABSCESSES

Beling and Abel used sulfamethylthiazole in 25 and sulfathiazole in 15 consecutive cases of staphylococcic infections; 13 of the cases were carbuncles, 12 furuncles and 15 abscesses. Staphylococci were cultured from the lesions of each patient and were recovered from the blood stream of 1. Thirty-eight of the patients were definitely improved after receiving a considerable quantity of the drug; 1 result was questionable because of the prolonged course of the disease and concomitant administration of staphylococcus vaccine. Furuncles were affected most readily and disappeared within four days, except in 2 instances; 1 had about ten furuncles and responded satisfactorily although eight days elapsed before the last one dis-

appeared and the other patient, the one who had received the vaccine, was not definitely improved. Response to thiazole therapy depends in part on the developmental stage of the lesion when the drug is commenced. The earlier furuncles responded about 25 per cent more slowly than well developed lesions but receded without formation of pus. The latter quickly soften, discharge their contents promptly and heal. No core forms and the discharge is liquid. The induration and redness around the lesion disappear rapidly. Carbuncles responded more slowly because of the extensive nature of the lesion but did so with relative rapidity and in essentially the same manner. The surrounding infiltrated areas became soft and the redness disappeared, while the drainage assumed the character described for furuncles. Any cores formed prior to treatment were soft and easily dislodged. Diabetes mellitus is not a contraindication to treatment. It may prolong the time required for the lesion to improve, but this is not always true as the carbuncle of one such patient responded in six days. If it is deemed necessary to excise a carbuncle, the authors advise giving sulfathiazole for twenty-four hours prior to excision, as they believe that this will tend to prevent spread of infection, the development of septicemia and residual local infection. Abscesses usually responded to treatment in from five to eight days, depending on their stage before treatment and on the presence of cellulitis. The authors state that, if staphylococcic cellulitis is treated before there is any tendency to localization, resolution may take place without formation of pus. If pus does form, the abscess will be insignificant. When an abscess has already begun to form, the time taken to clear up the cellulitis and the abscess together is usually several days longer. One case with cellulitis and abscesses cleared in twelve days, 1 with multiple intractable abscesses throughout both breasts cleared up within five days and in another case there was no effect from sulfamethylthiazole. In the last mentioned case there were honeycombed abscesses throughout the scalp and subaponeurotic region following an injury to the scalp and extensive cellulitis; also diabetes was present. Chemotherapy alone is not sufficient treatment for abscesses or any other collection of pus that is accessible. These various lesions should be handled in the customary manner with the addition of thiazole medication by a suitable route.

TUBERCULOSIS PROTECTION FROM BCG VACCINE

Aronson and his collaborators vaccinated from February 1936 to February 1938 1,565 Indian children from 1 to 19 years of age with BCG vaccine. During the same period 1,460 persons of the same age and sex, living in the same area and under the same conditions, were inoculated with 0.1 cc. of sterile physiologic solution of sodium chloride and served as controls. Before their inclusion in this study both groups failed to react to intracutaneous injection of 0.00002 and 0.005 mg. of purified protein derivative. Roentgenograms of the chests of most members of the two groups were taken either before or shortly after vaccination and at yearly intervals thereafter; also the members of both groups were retested with the same preparation of purified protein derivative. These Indians live under widely different climatic conditions (Arizona, Wyoming, North Dakota, South Dakota and Alaska) and are for the most part indigenous to their present locality. While their physical characteristics, dietary habits and social and economic patterns vary widely, their economic level is almost uniformly low. The BCG vaccine was injected intracutaneously over the deltoid region. It produced no untoward local or general reaction, and no instance of abscess formation or ulceration of the regional lymph nodes was noted. The local tissue response varied in different individuals. The relationship of the character of the local tissue reaction to resistance to tuberculosis is being studied. One year after vaccination, 93.3 per cent of 1,481 persons reacted to the intracutaneous injection of either 0.00002 or 0.005 mg. of purified protein derivative. Two years after vaccination 93.3 per cent of 1,446 persons retested were tuberculin positive and in three years 95.3 per cent of 619 persons reacted positively. The antigenicity appeared to be influenced by the rate of growth of the culture used in preparing the vaccine but not by the age of the culture or the number of generations that the culture had been grown on bile-free medium. Because of the marked variation in the results obtained by different investigators, the authors suggest that the preparation of BCG vaccine and the determination of the resulting allergy be made uniform. The BCG vaccine that they used was prepared in a field laboratory and was used within three days.

THE WRONG WORDS

Every writer should paste on his desk blotter this pointed memo from the editor of a newspaper to his staff:

We do not commence, we begin. We do not purchase, we buy. Not all women are ladies, but all ladies are women. We do not reside in residences, we live in homes. We do not retire, we go to bed. Our priests, ministers and rabbis are not divines. And the first reporter who writes of a body landing "with a dull, sickening thud," will land with a dull, sickening thud on the street, with hat in one hand and pay envelope in the other.—Edward Frank Allen —*How to Write and Speak Effective English.*

DANGEROUS DAN M'Crobe

A bunch of germs were hitting it up
In the bronchial saloon;
Two bugs in the edge of the larynx
Were jazzing a ragtime tune.
Back in the teeth, in a solo game,
Sat dangerous Ack-Kerchoo;
And watching his pulse was his light of love,
The lady who's known as Flu.—Exch.

TERMINAL CARDIAC MECHANISM IN CORONARY ARTERY DISEASE

Goodrich and Needles cite 2 instances in which they observed on electrocardiographic study the terminal cardiac mechanism of sudden death from coronary artery disease. One of the deaths was shown at necropsy to have been caused by marked coronary artery sclerosis (the patient had had angina pectoris). The other was the result of infarction of the anterior wall of the heart; it occurred on the tenth day after coronary occlusion. The first case supports the contention of Grieco and Schwartz that cardiac standstill should occur as frequently as ventricular fibrillation, and that if more records could be obtained additional instances of cardiac standstill would probably be discovered.

Coming Meetings

March 10 — Adams County Medical society — Quincy, Illinois — Dr. H. E. Schmitz — "Uterine Bleeding & The Human Pituitary Gland."

March 11 — Bureau County — St. Margaret's Hospital, Spring Valley, Ill. — 6:30 P. M. — Dr. Adrien Verbrugghen, "Neurology for the General Practitioner."

March 11 — Effingham County — Benwood Hotel, Effingham, Ill.—6:30 P. M. Dr. Harlan English — "What Can Modern Urology Offer."

March 11 — Tazewell County — Illinois Hotel, Pekin, Ill. — 6:30 P. M. — Dr. Stuart Wood — Diagnosis of Lower Back Pain.

March 12 — Coles-Cumberland County — Mattoon, Ill. — Dr. Wm. J. Morginson — "Dermatology." Dr. James Graham — "Varicose Veins and Ulcers."

March 12 — Clinton County — Pneumonia Program — 12:30 P. M. — Dr. Reno Rosi, Dr. Wayne Fox — Truesdail Hotel — Carlyle, Ill.

March 12 — McDonough County — Macomb, Illinois — LaMoine Hotel — 6:30 P. M.

March 13 — Morgan County — Colonial Inn — Jacksonville, Illinois, 6:30 P. M. — Dr. E. D. Allen — "Gynecological, Problems of the Adolescent Girl." Dr. Gustav F. Weinfeld — "Emotional Growth Problems of the Adolescent."

March 14 — Will-Grundy County — Louis Joliet Hotel — 12:30 Noon — Dr. Charles Drueck — "Cancer of the Rectum."

March 14 — Jersey-Greene County — Colonial Hotel — Jerseyville, Ill.

March 17 — Bond County — Pneumonia Program — Dr. Reno Rosi.

March 18 — Rock Island County — Moline Lutheran Hospital — Moline, Ill. 8:00 P. M. — Dr. Joseph L. Baer — "Forceps Delivery, the Indications, Contraindications and Technique."

March 18 — Macon County — Pneumonia Program.

March 19 — Tri-County Medical Society — Hunt's Cafe, Metropolis, Ill. 6:30 P. M. — Dr. A. E. Kanter—"Management of Obstetric Hemorrhages."

March 20 — Stephenson County — Freeport, Illinois, Dr. Frank C. ValDez — "Gastro-Enterology."

March 20 — Springfield Medical Club — 5:30 P. M. Cocktail Party — 6:30 Dinner — 8:00 P. M. Scientific Program — Dr. H. W. Orr — "Newer Methods In The Management of Compound Fractures."

March 21 — Will-Grundy County — Louis Joliet Hotel, Joliet, Ill. 12:00 Noon — Dr. Harvey S. Allen — "Infections of the Hand."

March 26 — Jefferson-Hamilton County — Emmerson Hotel — Mt. Vernon, Ill. Dr. Paul S. Rhoads — "Pneumonia."

March 27 — LaSalle County — Starved Rock Lodge — Starved Rock, Ill. — 6:30 — Dr. G. Henry Mundt — "Diseases of the Ear." Dr. Rollo K. Packard — "Diagnosis And Treatment of Abdominal Lesions."

March 27 — Edgar County — Paris Hospital — Paris, Ill. — 7:00 P. M. — Dr. Eugene Cary — "Problems of Forceps Delivery." (manikin demonstration.)

April 1 — Vermilion County — Hotel Wolford — Danville, Illinois — 6:30 P. M. — Dr. Joseph Beck — Ear, Nose and Throat Program.

April 3 — Post-Graduate Conference — Carbondale, Illinois — 11:00 A. M.

April 4 — Madison County — Collinsville — 2:00 P. M. Dr. W. C. Scrivner — "Management of Placenta Previa and Premature Detachment of the Placenta."

April 4 — Will-Grundy County — Louis Joliet Hotel, Joliet, Illinois — 12:00 Noon — Dr. M. Reese Guttman — "Diagnosis and Treatment of Middle Ear Infections."

April 8 — Rock Island County — Moline City Hospital — Moline, Illinois — 8:00 P. M. — Dr. Frederick H. Falls, "Obstetrical Operations."

April 9 — Post-Graduate Conference — Joliet — Louis Joliet Hotel — 12:00

April 10 — Effingham County — Benwood Hotel, Effingham, Illinois — 6:30 P. M. — Movie by J. B. DeLee — "Management of Eclampsia at Home" — Dr. H. Close Hesseltine — "The Place of the New Chemotherapeutic Drugs, Before, During and After Gestation." — Dr. Archibald Hoyne — "Incidence of Contagious Diseases and More Frequent Complications." — Dr. Bert I. Beverly — "The Management of Behavior Problems in Children."

April 11 — Will-Grundy County — Louis Joliet Hotel, Joliet — 12:00 Noon — Dr. John R. Neal "Medical Legislation."

Apirl 11 — Jersey-Greene County — Carrollton, Illinois — 6:30 P. M. — Dr. Wm. J. Morginson — "Diagnosis and Treatment of Common Skin Diseases."

April 24 — Edgar County — Paris Hospital, Paris, Illinois — 7:00 P. M. Dr. C. A. Aldrich — Treatment of Nephritis in Children." — Post-Graduate Conference — Galesburg, Illinois.

Marriages

ALEXANDER R. FAIRSHTER, Brookport, Ill., to Miss Jeanne Gormon of Philadelphia, in Philadelphia, February 4, 1941.

CLARENCE F. KELLY JR., Duquoin, Ill., to Miss Lillian Masters of Butler in October 1940.

HAROLD S. FRIEDMAN to DR. MARY ZELDES, both of Chicago, February 1.

Personals

Dr. Archibald L. Hoyne discussed "Importance of Observation in Diagnosis" before the West Side Branch on January 16.

Dr. George Crile Jr., Cleveland, discussed jaundice before the Sangamon County Medical Society in Springfield February 6.

Dr. Herbert E. Schmitz, Chicago, addressed the Winnebago County Medical Society at Rockford, February 11, on "Diagnosis and Treatment of Cancer of the Uterus."

The North Side Branch was addressed, February 6, by Dr. Russell L. Cecil, New York, on "Recent Advances in the Chemotherapy of Pneumonia."

Dr. Maurice I. Kaplan addressed the Douglas Park Branch, January 21, on "Radiation Therapy of Acute Infection with Special Reference to Osteomyelitis of the Digits."

A surgical symposium on "when not to operate" was presented before the Calumet Branch January 17, By Drs. Harry E. Mock, Lindon Seed and Channing W. Barrett.

The McLean County Medical Society was addressed at Bloomington, February 11, by Dr. Harold O. Jones, Chicago on "Tubal Pregnancy."

The Northwest Branch was addressed by Drs. Francis E. Senear and Robert W. Keeton, February 14, on "Dermatology in Internal Medicine" and "Office Management of Diabetes" respectively.

Lieut. Marcus D. Burnstine, Columbus, Ohio, medical reserve officer, has been named physician in charge of the health service station for civilian employees at the Rock Island Arsenal, succeeding Dr. Roderick G. St. Pierre, Rock Island, who went to Portland, Ore.

Dr. James Herrick delivered the fifth Christian Fenger Lecture of the Institute of Medicine of Chicago and the Chicago Pathological Society at the Palmer House, February 10. His subject was "Christian Fenger as I Knew Him, 1885-1902: A Study in Personality."

Dr. Alexander Brunschwig, associate professor of surgery and roentgenology, University of Chicago, the School of Medicine, delivered a public lecture at the Chicago Woman's Club February 12 on "The Story of Cancer Research." The talk was given under auspices of the cancer research committee of the Chicago Woman's Club and the Chicago Medical Society.

The Jackson Park Branch of the Chicago Medical Society was addressed, January 16, by Drs. Ludvig Hektoen on "The Federal Cancer Program" and Bowman C. Crowell, "Influence of Cancer Clinics in Cancer Control."

Dr. Jacob P. Greenhill has been appointed attending physician (office service in obstetrics and gynecology) at Michael Reese Hospital. Promotions on the staff include those of Drs. John S. Coulter to senior attending physician in physical therapy and William H. G. Logan to senior attending surgeon in oral surgery.

Dr. John Chornyak, psychiatrist for the Juvenile Court of Pittsburgh, has been chosen medical director of the Illinois Society for Mental Hygiene. He fills the vacancy that occurred in April 1940 when Dr. Conrad S. Sommer became superintendent of the division of mental hospitals in the Illinois Department of Public Welfare.

Dr. H. Close Hesseltine was invited to talk on "The Place of the New Chemotherapeutic Drugs in Obstetrics" before the Rock Island County Medical Society on February 18.

Dr. James H. Hutton was invited to talk on "Recent Progress in Endocrinology" before the Knox County Medical Society on February 18.

Dr. Herbert E. Schmitz was invited to address the Winnebago County Medical Society at Rockford on February 11, subject "Diagnosis and Treatment of Cancer of the Uterus."

Dr. Maurice H. Wald gave a paper on "Hypertension and Its Treatment" before the Effingham County Medical Society on February 11.

Dr. Robert E. Black gave a talk on "Heart Disease in Children" before the Kankakee County Medical Society at Kankakee on February 11.

E. J. Berkheiser was invited to give a paper on

orthopedics before the Will-Grundy County Medical Society at Joliet on February 14.

Dr. Philip Thorek was invited to address the Lee County Medical Society February 20 on "Differential Diagnosis of Acute Abdomen."

Drs. Clifford J. Barborka and David E. Marksson addressed the Henry County Medical Society at Kewanee on February 20. Subjects: "Medical Management of Gall Bladder Disease" and "Diagnosis and Treatment of Arthritis."

Dr. Robert S. Berghoff was invited to give a talk on "Coronary Disease" before the LaPorte County Medical Society at LaPorte, Indiana, on February 20.

Dr. Mortimer Diamond was invited to talk on "The Practical Significance of Gross Rectal Bleeding" before the Will-Grundy County Medical Society on February 21.

Dr. J. P. Greenhill, on January 28, read a paper before the Rock County Medical Society in Beloit, Wisconsin, on "Office Gynecology." And on February 12, read a paper before the Kane County Medical Society at Elgin, Illinois, on "Recent Advances in Gynecologic Endocrinology."

Dr. Irving Stein was invited to address the Williamson County Medical Society on February 4.

Dr. Edward Dudley Allen gave a talk on "Endometriosis" before the Will-Grundy County Medical Society on February 7.

Dr. William J. Pickett was invited to talk on "Ruptured Appendix" before the Madison County Medical Society on February 7.

On February 28, Doctor Edmund Jacobson delivered an address before the Young Women's Christian Association in Boston on the subject, Relaxation and Physical Education. A second address followed in the evening.

On March 5, Doctor Edmund Jacobson spoke before the Faculty and student body of Wells College, New York, on the subject, Relaxation and the College Student.

Dr. Paul C. Bucy has been appointed Associate Professor of Neurology and Neurological Surgery at the University of Illinois College of Medicine, Chicago. Dr. Bucy succeeded Dr. Percival Bailey as chief neurological surgeon at the University of Chicago when Dr. Bailey joined the staff of the University of Illinois in September, 1939.

Both men are now associated with Dr. Eric Oldberg, Professor and Head of the Department of Neurology and Neurological Surgery, in the new Neuropsychiatric Institute which has just been completed on the Chicago campus of the University of Illinois.

Mrs. Arthur I. Edison has been appointed Commander for Illinois of the Women's Field Army of the American Society for the Control of Cancer, succeeding Mrs. George Hanley Nippert.

Mrs. Edison is president of the Woman's Auxiliary to the North Side Branch of the Chicago Medical Society; Vice-President of the Woman's Auxiliary to the Illinois State Medical Society; a member of the Executive Board of the Lower North Community Council; Past Chairman of the Legislative Committee of the Women's Auxiliary to the Cook County Medical Society, and Past Chairman of the Hygeia Committee of the State and County Medical Auxiliaries.

News Notes

—Prof. Henrik Dam of the Biochemical Institute, University of Copenhagen, delivered the Charles Sumner Bacon Lectures for 1940-1941 at the University of Illinois College of Medicine. Professor Dam spoke February 12 at 1 p. m. on "Vitamin K, Its General Significance in Biochemistry," and February 12 at 4 p. m. on "Vitamin K, Its Role in Human Pathology and Its Application in Therapeutics."

—Lieut. Col. Charles G. Hutter, Medical Corps, U. S. Army, liaison officer of the Office of the Surgeon General to the American Medical Association, was the principal speaker and guest of honor at the annual session of the Chicago Heart Association in Abbott Hall February 12. Colonel Hutter's subject was "Heart Disease and National Defense."

—The Clara A. Abbott trust has given $40,000 to the Evanston Hospital, supplementing an earlier donation of $250,000. The money is being used for construction of the Abbott Memorial Building at the hospital, which will house clinical and research laboratories, an auditorium for medical teaching and facilities for outpatient diagnostic tests. Mrs. Abbott was the widow of Dr. Wallace C. Abbott, founder of the Abbott Laboratories.

—The midwinter meeting of the South Side Medical Assembly was held on February 19 with clinics in the morning at various hospitals and afternoon and evening sessions at the Shoreland Hotel. Symposiums made up the afternoon program, and after dinner Dr. James R. Bloss, Huntington, W. Va., spoke on "Sterility Studies in the Female." The assembly is an organization consisting of all the south side branches of the Chicago Medical Society.

—Reports from the state department of health indicate that an outbreak of measles in Illinois is reaching epidemic proportions. During the first five weeks of 1941, 5,512 cases were reported, more than four times the number of cases on record for the entire year of 1939 and more than half the total number of cases recorded for 1940. During the week ended February 3 the total for the state numbered 1,339 as against 30 for the corresponding week last year. The largest number of cases has been reported from the north central section of the state.

—The dedication of a new tumor clinic at Henrotin Hospital took place January 19 with Mr. Frank A. Miller, president of the board of directors of the hospital, presiding. The speakers included Drs. Joe Vincent Meigs, Boston; Bowman C. Crowell, John A. Graham and Charles B. Puestow. The new clinic has special quarters for the examination, diagnosis and treatment of patients suffering from neoplastic diseases. High voltage roentgen therapy equipment has been installed in a lead lined room, and radium in the form of needles and tubes is also available. Private and charity patients will be accepted for diagnosis and treatment. Special tumor conferences will be held at the hospital on the third Wednesday of each month. Dr. Henry L. Jaffe has been made director of the new clinic.

—FOR SALE: Used "Standard" X-Ray-Radiographic, Fluoroscopic and Therapeutic. Includes vertical cassette holder, Bucky diaphragm, Cassettes, Three timers, Stereoscopic view box, Film chest, tank, gloves, films, etc. MEDICAL ARTS SUPPLY COMPANY, 1767 W. Ogden Ave., Chicago.

Deaths

WILLIAM ROBERT ABBOTT, Chicago; Northwestern University Medical School, Chicago, 1911; a Fellow, A.M.A.; fellow of the American College of Surgeons; on the staff of the Englewood Hospital; aged 55; died, Dec. 21, 1940, of coronary occlusion.

HAIM SOLOMON BOBROFF, Chicago; University of Moscow Faculty of Medicine, Russia, 1916; age 49, died, Dec. 16, 1940, of cyanide poisoning, self administered.

WILLIAM F. CATHCART, Chicago; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1906; aged 68; died in December 1940 of arteriosclerosis.

JAMES FRANKLIN COOPER, Edinburg, Ill.; Barnes Medical College, St. Louis, 1901; served during the World War; aged 75; died, Dec. 4, 1940, in the Decatur and Macon County Hospital, Decatur, of cerebral hemorrhage.

HERMAN C. W. GRESENS, Chicago; Rush Medical College, Chicago, 1897; a Fellow A.M.A.; aged 71; died, Nov. 28, 1940, of heart disease.

FRANCIS PARRIER HORAN, Evanston, Ill.; University of Pennsylvania Department of Medicine, Philadelphia, 1907; a Fellow, A.M.A.; served during the World War; on the staff of St. Francis Hospital; aged 60; died, Dec. 23, 1940, of coronary thrombosis.

FRANCES MAY GAGE HULBERT, Chicago; Hahnemann Medical College of the Pacific, San Francisco, 1895; aged 75; died, Dec. 17, 1940, of injuries received when struck by an automobile when crossing the street.

JOHN JOSEPH KOWARSKAS, Chicago; Chicago Medical School, 1927; member of the Illinois State Medical Society; aged 42; died, Dec. 14, 1940, in the Holy Cross Hospital of diverticulitis.

EDWIN J. KUH, Chicago; Universität Heidelberg Medizinische Fakultät, Baden, Germany, 1882; a Fellow, A.M.A.; an Affiliate Fellow of the American Medical Association; aged 82; died, Dec. 31, 1940, of heart disease.

WILLIAM EDWARD MCGUIRE, Cottonwood, Ill.; Barnes Medical College, St. Louis, 1899; member of the Illinois State Medical Society; for many years county coroner; aged 67; died, Dec. 10, 1940, of heart disease.

WILLIAM R. ROSS, Mount Vernon, Ill.; College of Physicians and Surgeons, Baltimore, 1880; member of the Illinois State Medical Society; aged 86; died, Dec. 19, 1940, of heart disease.

CARLES M. SEATON, Morrisonville, Ill.; Illinois Medical College, Chicago, 1902; member of the Illinois State Medical Society; aged 64; died, Dec. 4, 1940, in St. Vincent Hospital, Taylorville, of angina pectoris.

CLYDE WARE SWANK, Chicago; Rush Medical College, Chicago, 1890; aged 76; died, Dec. 6, 1940, of carcinoma.

CLAUDE MELNOTTE WADE, Chicago; Louisville (Ky.) National Medical College, 1891; aged 77; died, Dec. 26, 1940, of cerebral hemorrhage.

LEE A. WIXSOM, Chicago; Chicago Medical School, 1918; a Fellow, A.M.A.; aged 48; died, Dec. 9, 1940, in the Englewood Hospital of septicemia, pyemia and diabetes mellitus.

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